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CONTENTS.

You—And Your Competitor 95
The Plumbing in the New Post Office at Jersey City, N. J. 96-99
Obituary: J. J. Dunseath, David E. Clow 99
The Height of Wisdom—A Modern Tragedy in One Act 100-101
Contracts Awarded 101
Frictional Resistances Due to Elbows and Other Fittings 102-104
An Analysis of the Plumbing Codes of Thirty-Seven Cities 105-108
Farm Paper Writer Urges Sanitary Plumbing by Plumbers 109-110
Questions and Answers 111
Business and Baseball—The Bonehead Player..... 112
New Business Ventures 112
News of Interest Among the Wholesalers and Manufacturers 113-116
The Metal Market 116
Among the Plumbing and Heating Contractors....117-122
Patents 123-124
Classified Advertisements 64
Index to Advertisers 66
Buyers' Directory .....68, 70, 72 and 74

YOU—AND YOUR COMPETITOR.

IN THIS business game there's room for all of us. You say, "If we could eliminate or combine a few of the shops we could all make more money." Sounds good, doesn't it?

But as master plumbers and fitters do we not recognize that times are rapidly changing, that our trade is forging ahead by leaps and bounds, that we must constantly strive to adapt ourselves to new conditions?

New and better products for sanitary betterment are daily being devised—we must **know** what is in the market. Constant self-education must be a part of our business—we cannot stand still without going backward.

If you were the only sanitarian in your town how many people could you, by your own efforts, hope to educate to modern plumbing and heating standards? With your competitors also doing educational work, it becomes more profitable for all.

Education of the buyer is just now the most profitable way to increase your business. Educate by advertising, by attractive windows and showrooms, by personal contact. Don't expect the buyer to know what is modern and sanitary—**you** must keep abreast of the times—**you** should be the recognized authority.

Let price be the last consideration—make the reputation of your work speak for itself. Don't you **know** that the shop with the **reputation** is constantly securing contracts at higher prices simply because of the **confidence** of the buyer in that shop?

Strive for that **reputation**—educate your possible customers to the most approved sanitary appliances—then you'll have neither time nor inclination to haggle over price.

Price is a means for comparing values—convince your customers that you are giving them additional value, and in nine cases out of ten you can secure their business with little or no competition.

And while you are doing this, your competitor must build up his **own** reputation—spend your time building up **yours**—attend to business—and the subject of competition will have solved itself.

The Plumbing in the New Post Office at Jersey City, N. J.

By Harold L. Alt

SEVERAL issues ago the heating and ventilating work in the new Jersey City postoffice was described and the plumbing work which is being performed by S. Faith & Co., of Philadelphia, Pa., is found to so closely intermingle with the heating in some locations that it is thought a description of this work will prove equally interesting.

The sanitary layout was made in the supervising architect's office in Washington, D. C., and consists of the standards adopted by various government departments collected and invited into a homogeneous assembly of plumbing fixtures and piping. The reader's attention is particularly called to the method of cooling drinking water and the details which are clearly given in this article.

Drainage System.

The entire drainage system consisting of all soil, waste, vent and drain piping lying below the basement floor and below ground outside of the building including the main connections from the building to the city sewers, is of cast iron pipe and fittings, and Fig. 1 shows the complete basement drainage system. All the soil and vent pipes, the interior down spouts, and interior roof drainage piping above the basement floor, together with all waste piping (excepting that which is later described as brass) is of galvanized wrought iron pipe. There are cleanout fittings located on the cast iron pipe lying below the basement floor line which are installed in manholes for convenient access. A heavy cast iron T fitting with a heavy, cast-brass, screw-jointed, cleanout plug of the same size as the pipe is placed in each vertical soil, waste and vent pipe (excepting in the pipes that run in the shower bath enclosures or behind urinal stalls) just above the basement floor.

Area drains are provided for each basement window and the entrance area, and consist of cast iron cesspools. There is also a drain provided as shown in Fig. 2 from the boiler pit with a back water valve having non-corrosive bearings which is designed to stand open under normal conditions. This is installed in a manhole with a hub end gate valve with a bronze seat located in another manhole adjacent to the first. A running trap is placed on the connections from the area cesspools, from the icebox, from the down spouts from the low roof, and from the drains from the first floor water tables. On each of the two main drains is placed a running trap which is located in a manhole placed between the building and the city sewer. The soil and waste pipes on the horizontal runs are given a grade of ¼ inch per foot, in all cases where it is possible and the stacks are extended in full size to above the roof line for a distance between 12 inches and 18 inches. Where the soil and vent stacks pass through the roofing they are carefully flashed and soldered water tight.

Where an end or circuit vent pipe from a fixture or line of fixtures is connected to a vent pipe from another fixture or group of fixtures located on a lower floor or on the same level, the vent pipe from the fixtures on the upper floor is run up a dstance of 4 feet above the floor before such connection is made to prevent the possibility of the use of the vent pipes for waste water. Fig. 3 shows the arrangement of the soil and waste pipe in a typical toilet and indicates clearly how the main lines are extended up to vent stacks.

Water Supply.

The water supply is obtained from the city water main located in the street and is brought into the building through a gate valve with a T handle with a cast iron extension box and cover placed near the curb line. Just inside of the building wall a double seat gate valve is placed and just beyond the gate valve outlets are left in the horizontal pipe with gate valves on same for water meter connections. A drain connection with a ¾ inch globe valve provided with a ¾ inch hose nipple is installed on each main water pipe so that practically the entire water system inside of the building may be drained to these points. The water supply piping throughout the building is of galvanized iron with the exception that the flush pipes from the flush tanks to the water closets and slop sinks and all exposed flush pipes from the urinal flush tank to the bowls, all lavatory waste pipes which are exposed between the lavatory slabs and the floor line together with all water and supply pipes in the toilet rooms from the floor to a point 6 feet above are of brass pipe.

After leaving the meter 3 inch water supply pipes are run along the basement ceiling supplying branches of various sizes. In general the cold water supply pipes to the toilet rooms consist of the following sizes:—

Toilet rooms with less than 4 fixtures..... ¾ inch
Toilet rooms having between 4 and 8 fixtures.... 1 inch
Toilet rooms with over 8 fixtures.....1¼ inch

A plugged T for boiler supply is provided on the water main in the basement. On the water supply pipes in the basement and the main supply to each toilet room are placed with standard weight, double seat gate valves located in accessible positions. Stop cocks were not permitted on the work; the valves on the brass pipes are finished brass and nickel plated; the other valves being of rough brass body with finished trimmings. The gate valve on the main supply pipe to each toilet room controls the fixtures entire in that room but no others.

Hot Water Supply.

Hot water supply pipes are run to each lavatory, shower bath, and sink in the building. The diameter of the pipes to toilet rooms containing two or more fixtures with hot water connections is usually ¾ inches in size. From each hot water riser to fixtures located above the first story a ½ inch return circulating pipe is taken off at a point just below the highest hot water connection from which location it is run back down to the basement and connected into a ¾ inch return main which runs back and hooks up with the hot water boiler. Each branch circulating pipe as well as the main circulating pipe near the boiler is provided with a gate valve to correspond with the valves on the hot water pipes and the main circulating pipe is carried through a check valve just before it enters the boiler. The branch water supply pipes are of ¾ inch in size where connected to sinks and ½ inch in size on all other fixtures and no supply pipes to any of the toilet rooms are buried under the floor construction or behind marble or plaster work, all such pipe being run exposed or else in the furred space between

the ceiling and the floor above. Risers supplying toilet rooms on the upper floors are run in chases or vent shafts.

The hot water tank is installed where shown on basement plan (Fig. 1) and is 24 inches in diameter by 7 ft. long with an interior steam heating coil. The shell is built of ¼ inch galvanized iron and the heads of ⅛ inch metal, the tank having a 3¼ inch by 4½ inch handhole provided with a plate, yoke and gasket. The copper coil consists of No. 16 B & S gauge, seamless discontinued copper tubing, the inlet of the coil being through the top of the tank and the outlet through the bottom. The tubing is of 1½ inch outside diameter but the return is reduced to 1¼ inch with a check and gate valve. The tank is also provided with a ¾ inch lever pattern brass safety valve set at 25 lbs. above the city pressure and also a ¾ inch angle pattern, hot water mercury thermometer with a scale graduated from 40 degrees to 240 degrees Fahr. There is also a thermostatic regulator installed to control the steam supply to the coil and so adjusted as to shut off the steam when the temperature of the water in the tank reaches 140 degrees. This regulator is inserted in the head of the tank at about midway between top and bottom. The tank is supported on a frame consisting of 2½ inch pipe with cross piece under the tank and projecting into the wall behind the tank a distance of 6 inches.

Drinking Water Supply.

The ¾ inch water supply pipe which is run to and connected with the inlet of the coil in the ice box is provided with a gate valve and a pressure reducing valve with gate valves placed on each side and a bypass connection (also provided with a gate valve) which is run around the reducing valve. There are 3½ inch dial, japanned iron case, pressure gauges, graduated to 100 lbs. installed on each side of the pressure reducing valve. The branch ice water supply piping to each fountain is of ⅜ inch diameter and is supplied with a gate valve. The main ice water supply piping from the coil in the box to the branch connections is of ½ inch diameter.

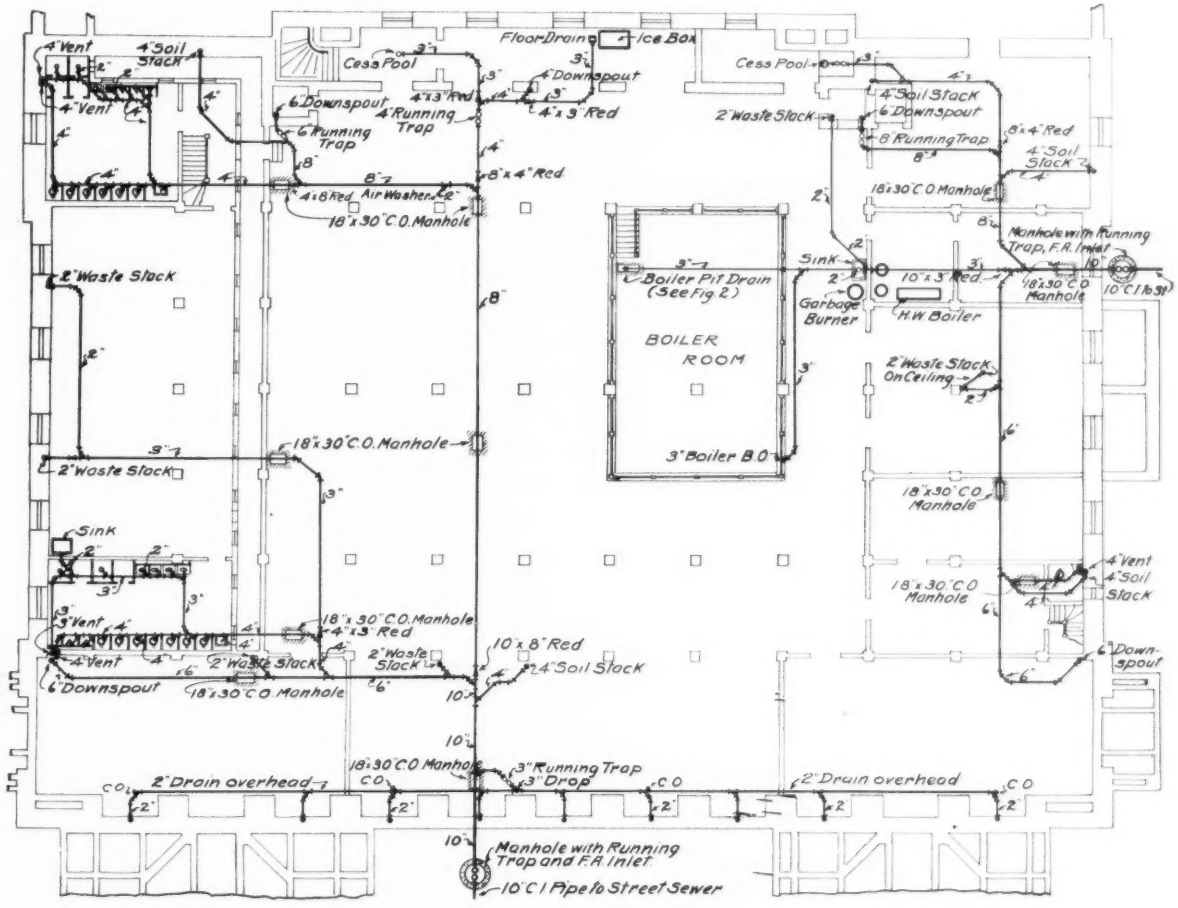


Fig. 1.

Ice Box.

In the basement is installed an ice box for cooling the drinking water supply as shown in detail in the two sectional views, Figs. 4 and 5. This is constructed of 5/4 inch x 2 inch tongued and grooved lumber, and is thoroughly insulated with 2 inches of granulated cork packed tightly. This box is lined with No. 26 galvanized sheet iron which extends over the top to the edge of the box. All laps and joints in the lining are soldered absolutely water tight and the lining fits the box snugly so that it is not necessary to use tacks, nails, etc., for fastening. The cover for the box is constructed in a similar manner, fits the box tightly, is hung with heavy galvanized

iron hinges and provided with a lifting handle. The box is set on a strong frame of yellow pine standing 6 inches high and contains a cooling coil consisting of about 50 lineal feet of ¾ inch diameter block tin pipe which is continuous and without fittings. The drain pipe with a gate valve both 1¼ inch in diameter is taken from the bottom of the box while a 1 inch overflow loop bypass around the valve is provided on the drain in order that the water level may be

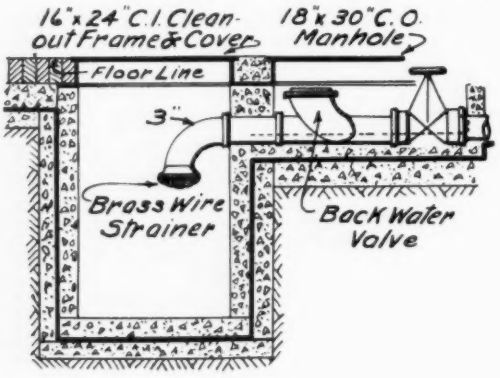


Fig. 2.

maintained to the height of the overflow outlet. The drain discharges over the cesspool (which is of the same type as those used for the basement windows) from which a 3 inch waste pipe is run with a heavy cast iron running trap having a cast brass, screw-jointed, countersunk, or recessed cleanout plug. The trap is located near the cesspool with the top of the cleanout plug flush with the floor line. All pipes passing through the box are fitted with flanges both inside and outside of the box, the flange on the inside being soldered water tight to the galvanized iron lining. All the hangers, bracing, piping, bolts, fittings, hinges, etc., except the cooling coil are of heavy galvanized iron. The ice box together with the stand is painted three coats of the best lead and oil paint.

The drinking fountains installed in the postoffice work room consist of the pedestal type bubble drinking fountains with the bubble nozzle located in the bowl which is of ample size and with the water supply and waste connections carried up inside of the column and the flow controlled by a pedal valve in the base of the column together with a lock shield regulating valve. The waste pipes are fitted with non-syphon nickel plated brass traps, all exposed metal fittings in connection with the water supply and waste being heavily nickel plated.

Covering.

All the galvanized iron pipe in the building including all risers in the vent shafts, lookouts, and in the wall chasers, and all galvanized iron piping in the toilet rooms is covered with first-class non-conducting felt covering. Valves and fittings are provided with sectional removable coverings or with felt or plastic asbestos, the coverings being of the same finished thickness as that of the pipe and having canvas jackets and banding similar to the pipe covering. All the horizontal roof drainage piping exposed in the attic or roof space is also covered and the jacketing used throughout is canvas jacket weighing 5½ oz. to the yard with bands of lacquered tin ¾ inch wide of No. 33 gauge. The hot water boiler and smoke connection from the garbage burner are also covered. The galvanized iron water piping from the ice box to the drinking water fountain is insulated with the best quality of sectional moulded cork covering and jacketed and banded similar to the other covering already described. This covering is 1½ inch thick being composed of pure granulated cork, moulded under pressure and baked at high temperature. The fittings and the valves are similarly insulated. The water supply to the coil in the ice box is covered the same as the other water supply pipe. All covering was bronzed or painted on completion.

Garbage Burner.

A garbage burner is installed in the basement and has a water leg constructed of flanged steel and a lower grate designed for burning No. 2 buckwheat anthracite coal, while the upper grate is the water tube grate and consumes the garbage. There is a large sized garbage door, firedoor and ashpit door, all of which are cast iron and are set in cast iron frames. The water leg and the water tube grate are connected to the hot water supply tank. The smoke pipe is made up of No. 20 gauge galvanized iron and is connected to the smoke breeching of the main heating boiler. This smoke pipe is provided with a wing damper, check damper and a cleanout plug, and a regulator is connected which controls the ashpit draft only. A ¾ inch diameter brass gate valve with a ¾ inch hose nipple is inserted in the circulating pipe between the garbage burner and the hot water tank for the purpose of draining both the tank and the burner.

Marble Work.

Practically all the toilet rooms have a marble wainscot ⅞ inch thick and 6 ft. high and all toilet rooms and the janitor's slop sink closet have terrazzo floors with white marble chips. The filling under the terrazzo is of 1-2-4 concrete reinforced with 2 inch mesh No. 16 gauge metal fabric placed ½ inch from the bottom and the finished coat is approximately ¾ inch thick and is

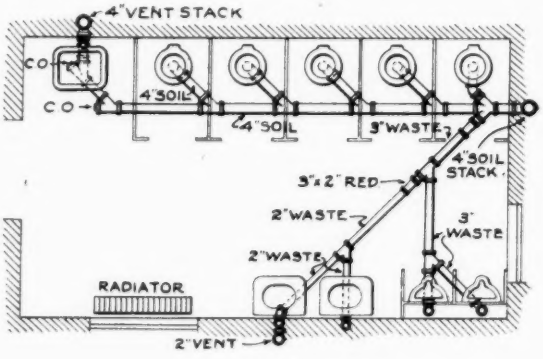


Fig. 3.

composed of white marble chips with enough Portland cement to firmly unite the base.

Fixture List.

The fixtures installed in this building in the toilet rooms where there are two or more closets consist of: 18 Waterclosets with high vitreous ware tanks and floor outlets, vitreous ware bowls, flushing rim, syphon jet, pedestal base and operating properly with not more than 5 gallons of water. All wood seats of well seasoned white oak, highly polished 1⅛ inch thick, reinforced with one piece, cast brass, nickel plated ring and box hinge plate secured to wood with oval head, countersunk screws.

Reinforcing ring has two sockets fitted with mushroom rubber bumpers. All metal work exposed of brass finished and nickel plated.

5 Watercloseets with high vitreous tank and floor outlet similar to the above operated with four gallons of water.

1 Watercloset similar to the above with back outlet.

8 Urinals with vitreous ware tanks of the Lip type with

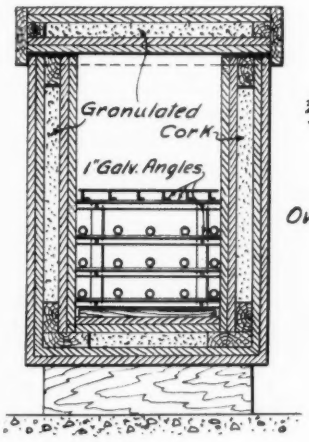


Fig. 4.

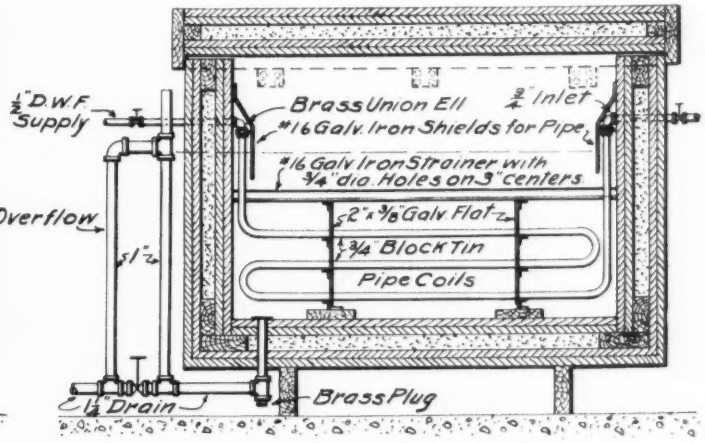


Fig. 5.

vitreous ware bowls, flushing rim, syphon jet and trap moulded in the ware. Each bowl to be flushed with not more than 2 gallons of water.

4 Showerbaths with adjustable ball joint, rain shower, face of shower head being of cast brass with round perforation, threaded and removable and about 5 inches in diameter with cast brass nickel plated, chain indexed, nonscalding regulating valve, set about 4 feet above the floor. Hand spray attachment is provided of about 3½ inches in diameter with 5 ft. of half inch braided reinforced rubber tubing with wall hook for support when not in use. Drainage provided by 2 inch waste pipe through a floor drain which is a combination of a drain and deep seal trap with a plain brass cover with brass strainer. All metal fittings are of brass, nickel plated.

4 Slop Sinks 20 inches x 20 inches, 20 inches high with vitreous ware bowl, flushing rim, syphon jet, pedestal base, bottom outlet with trap moulded in ware, operated by 4 gallons of water supplied from vitreous overhead tank, 10 inches x 10 inches x 18 inches with 1½ inch O. D. brass tubing, flush pipe. Tanks are supplied by ½ inch pipe with full size opening brass ground joint union between the ball cock and the compression stop. All exposed metal work of finished brass, nickel plated.

11 Lavatories rectangular shape, 20 x 24 inches without backs and supported on brackets of cast brass nickel plated, set 2 inches out from the wall, 1½ inch finished cast brass nickel plated, waste and non-syphon trap with plain heavy pattern "Fuller" finished brass nickel plated faucets and chain stay and soap cup.

4 Lavatories of the corner type without backs quite similar to the above.

7 Lavatories of the corner type similar to the above described but with backs.

10 Lavatories of rectangular shape similar to those already described but with backs.

1 Sink with integral back and concealed hangers 20 inches wide 30 inches long x 7 inches deep of cast iron with roll rims and flat face supported on concealed wall hangers with nickel plated finished brass waste strainer 1½ inch waste and non-syphoning trap with ¾ inch "Fuller" pattern faucets, all exposed piping and metal work finished brass, nickel plated.

1 Sink with back support for drain board, with drain board on right hand end, sink 30 inches x 24 inches x 7 inches deep with a 10 inch high back and of vitreous ware with roll rim, flat face and integral back, supported on 2 vitreous ware legs with 1½ inch waste and non-syphoning trap, "Fuller" faucets as previously described; all exposed metal work being of finished brass, nickel plated. The drain board is constructed of ash 1¼ inch thick with one end secured by cast brass corner pieces and screws coated with linseed oil before erection.

OBITUARY.

J. J. Dunseath.

One of the best known plumbers of the State of Washington, Mr. J. J. Dunseath, died suddenly at Tacoma, on October 9th last. Mr. Dunseath has been engaged in the plumbing and heating business in Tacoma for a number of years, and was well established. He leaves a wife and family.

David E. Clow.

David E. Clow, who has for several years conducted a plumbing establishment at 1064 Linden Avenue, Wilmette, Ill., died at his home in that city on Monday evening, October 28th, from heart disease. Mr. Clow was a member of the North Shore Association of Master Plumbers, and he is survived by his wife.

CONVENTION DATES.

January 28, 29 and 30, 1913.—The twenty-first annual convention of the Illinois Master Plumbers' Association, at Springfield, Ill. The officers of the association are: President, W. J. Hilliard, Elmhurst, Ill.; first vice-president, C. D. Brownell, Champaign, Ill.; second vice-president, Bernard Gause, Jacksonville, Ill.; treasurer, O. W. Dawson, Decatur, Ill.; secretary, W. C. Haviland, Coulter Block, Aurora, Ill.

"How long will this cast-iron boiler last," asks the looking-around buyer.

"Till the crack of gloom," replies the new and facetious salesman.

The Height of Wisdom—A Modern Tragedy in One Act

By H. E. S.

Cast of Characters.

Sketch .....A Business Architect.
Tongs .....A Steamfitter
Guile .....An Imp.
Caution .....A Good Fairy.

Scene: An inner room in a successful architect's office. In the center, a broad mahogany flat top desk, bearing a Tiffany reading lamp and other furnishings in silver. Some papers are gathered together in a neat pile at one corner. Several large leather covered chairs are arranged near the desk and on the walls are engravings of famous works of architecture and photographs of modern skyscrapers.

As the curtain rises it discloses Sketch seated at the desk. He leisurely lights a cigar and as he tosses the burnt match into an ash tray, a faint rap is heard on door at right. He takes a paper from the pile and places it before him.

Sketch: Come in.

The door opens slowly. Enter Tongs and Guile. Guile, invisible to Tongs and Sketch is a wild rollicking bit of a sprite who goes, skipping and dancing across the room and bounds like a rubber ball onto the desk opposite Sketch. There he sits swinging his legs and grinning as he watches Tongs.

Sketch does not look up from the paper before him and Tongs stands diffidently half-way from the door holding his hat in both hands. Finally Sketch throws the paper aside and sees Tongs.

Sketch: Ah! Good morning Mr. Tongs. I'm glad to see you. Pull up a chair and sit down.

(Guile hops up on the desk, does a few frisky steps, opens a box of cigars near Sketch and as Tongs seats himself, he jumps up and sits on his farther shoulder.)

Sketch: Well, Well! How goes it? Won't you have a cigar?

Guile: (In stage whisper, putting his mouth close to Tongs' ear) Twenty-five cents, straight.

Tongs: Oh just fair, Pretty quiet now. (Takes cigar.) Thank you, thank you. No money in the heating business now-a-days. It's——

Sketch (Laughs, interrupting him) Too bad about you fellows. Riding around in your automobiles, but always croaking, croaking.

Guile: (In Tongs' ear.) See what a jolly, joking good fellow he is.

Sketch: Well, what have you got on your mind today, Mr. Tongs?

Tongs: Oh, I just thought I'd drop in and ask you how I stand on the school house job. You've opened the bids, I hear.

Sketch: Oh, yes, yes. The school house job. Yes we've opened the bids and you're just the man I want to see about that.

Sketch: "There, That's Talking,—That's Business. Have a Fresh Cigar."

Guile: (Still at Tongs' ear.) Just hear that. You must have it cinched.

Tongs: (Smiling and moving awkwardly in his chair) That sounds encouraging.

Sketch: (Looking through pile of papers) Well now Mr. Tongs, it's this way. We've got some bids here—a lot of them in fact, for almost everybody has figured. Most of them are away out of sight. They don't stand the ghost of a show, but the low man, according to our figuring here in the office, he's somewhere near right. As low-bidder, he ought to get the job but the trouble is Mr. Tongs, we don't know anything about him. He's never done any work for us. Now if you had been in here with that low figure, I'd be delighted. What you've done for us has always been high-class A No. 1, work—perfectly satisfactory. I'd like to see you get the job, Mr. Tongs. Now if you care to—Let's see how we stand here.

(Again searches through pile of papers).

Guile: (At Tongs ear) Now's your chance. Did you hear what he said about your work? Isn't it fine to have an architect like that, holding you in such high esteem? Just look at that pile of papers! All bids. Wouldn't those other fellows like to stand-in the way you do?

(While Sketch is looking through the papers, the door opens stealthily and Caution comes into the room. Like Guile, he is also invisible to Sketch and Tongs, though easily seen by most of the audience. Seeing Guile perched on Tongs' shoulder, he rushes at him, grabs him by his leg, pulls him to the floor and scrambles up himself).

Caution: (At Tongs ear) Now don't be a fool. You know what happened the last time you played that game. One of this fellow's jobs too. Another one like that and you shut up shop. There, he's found the paper. Lookout now, he's going to spring a nice cute little one on you. You take my word and be careful while I jump down and try to hold that little devil Guile. (He jumps down and encountering Guile who has recovered from his fall to the floor engages him in terrible combat.)

Sketch: Ah, here it is. Now, Mr. Tongs, you are just an even twelve hundred high. If you can work your pencil around that, it's your job. (Tongs shakes his head slowly and puts on his hat.)

Sketch: What, not going to try? Why, I had an idea you could come back. Always thought you were a business man, Mr. Tongs. (Guile for an instant eludes Caution and again hops upon Tongs' shoulder.)

Guile: Don't be a quitter. Take a chance anyway. Don't you see that he is losing all respect for you?

(Caution dislodges Guile by another mighty pull at his leg and they go at each other with renewed energy. Tongs takes his pencil and after figuring awhile looks at Sketch in an irresolute, uncertain way.)

Sketch: No trouble to figure around a trifle like that is it? Why Tongs you want that job, you can't afford to lose it. You want to get established here. We've got a lot of other good work coming on.

(By this time the struggle between Guile and Caution has resulted disastrously for Caution. He lies prone upon the floor and Guile is free to climb again to Tongs' shoulder).

Guile: (At Tongs' ear) Why sure you want it. I've fixed that weakling, Caution. He's overtrained, that's what's the matter with him. He always is. You won't get anywhere if you listen to him. Suppose you don't win out on this, isn't Sketch a fine fellow, and won't he be handing you something good some of these days? Buck up and go to it.

(Tongs reluctantly reaches for a pen and slowly signs his name to the contract, which Sketch hands to him.)

Sketch: There, that's talking,—that's business. Have a fresh cigar.

(As curtain lowers, Guile is seen doing a wild Apache war dance around the prostrate form of Caution).

A MODERN PLUMBING AND HEATING ESTABLISHMENT.

In this column is shown an interior view of the up-to-date show room of the firm of L. B. Sheible & Sons, located at 14 Chestnut Street, Youngstown, O. L. B. Sheible, president of this concern, is one of the veteran plumbers of Youngstown, having followed his chosen trade for

Up-to-Date Showroom of L. B. Sheible & Sons, at Youngstown, O.

over forty years. He is also president of the plumbing board of examiners of that city. Some of the recent contracts secured by this company are: Installation of special hospital goods and plumbing in the city hospital and operating building, and plumbing and heating the Fisher storage and warehouse building.

CONTRACTS AWARDED.

Sioux City, Ia.—J. F. Gearen has been awarded the contract for the plumbing in the Davidson building.

Piqua, O.—Gerstmeyer & McKale have been awarded the contract for the plumbing in the new high school building. Consideration $8,995.

Hartford, Conn.—Moriarty & Rafferty have secured the contract for the installation of a new heating system in the almshouse.

Iron Mountain, Mich.—John Obermeyer, of this city, has secured the contract for the installation of an up-to-date plumbing system in the new high school building at Crystal Falls, Mich. Consideration, $5,732.68.

Laurium, Mich.—The Peninsula Plumbing & Heating Co., of this city, has been awarded the contract for the heating of the new high school at Crystal Falls. The contract amounts to $12,000. This company will also install a vacuum cleaning system in the same building for $826.

Suffolk, Va.—H. M. Macleary has been awarded the heating contract in the residence of John F. Pinner, of Norfolk, Va.

Manitowoc, Wis.—J. H. Rippler & Co. have secured the contract to install a heating plant in the residence of A. J. Fanta.

Detroit, Mich.—Joseph Bargen has been awarded the heating contract in the residence of George M. Grix, of this city.

Frictional Resistances Due to Elbows and Other Fittings

Some Comments on Their Operation When Used in Hot Water Heating Systems

By F. E. Giesecke, Professor of Architecture, University of Texas, Austin, Tex.

TO construct the pipe system of a hot-water heating plant correctly, it is necessary to arrange it so that the hot water will flow to the several radiators in such a way that each radiator will be supplied with its proper portion of the total heat provided.

The flow of the water to any one radiator is largely influenced by the friction which the water encounters in the circuit leading to and from that radiator. This friction is due partly to the pipes and partly to the pipe fittings used to build up the circuits, and it is essential to be able to calculate accurately the friction-heads due to pipes of various sizes and also those due to the various pipe fittings.

The former have been accurately determined and are generally available but the writer has not been able to find any reliable information regarding the latter; one author, for example, considers a 90 degree elbow equivalent to a pipe whose length is equal to 520 diameters; another considers it equal to 70 diameters; one considers it equal to a pipe 25 feet long; still another places the friction head of a 90 degree elbow at $.5V^2/2g$. The great differences between these values quoted by leading writers on Heating and Ventilation show that reliable information on this subject is wanting.

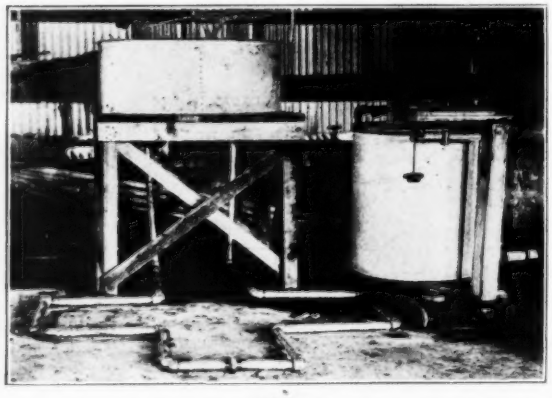


Figure 1.

To determine the friction-heads due to elbows and other pipe fittings the writer has conducted a series of experiments in which he has had the able assistance of Mr. J. E. Baade, B. S. in Architectural Engineering.

The apparatus employed is shown in Fig. 1, and consists essentially of a circular tank divided by a vertical partition into two adjoining tanks connected by means of the pipe and fittings to be tested and equipped so that the difference in elevation of the water in the two tanks, which represents the friction-head, and the velocity of the water in the pipe, could be accurately measured.

The arrangement of pipes and elbows shown in Fig. 1 is the one used for the third test, described below and conducted to determine the friction-head due to eight elbows.

In the first test the two vertical pipes leading from the two adjoining tanks were connected by means of the two elbows, two short pipes, and one union, shown in the foreground of Fig. 1, and the two elbows, shown in Fig. 1 on the two vertical pipes together with the two short horizontal pipes leading forward from those elbows.

The first series of tests was made to determine the friction-head due to this combination, which consisted of one union, four elbows, and six short pipes, and to the flow of water from the first tank into the pipe system and from the pipe system into the second tank.

This combination and its corresponding friction-head was a part of every other series of tests except that in the second in which the two short horizontal pipes leading forward from the vertical pipes were replaced by two pipes which were, together, 39.75 feet longer.

The difference between the friction-heads determined in the first series of tests and those determined in the second series are the friction-heads due to a straight pipe 39.75 feet long.

This friction-head, expressed in feet, for a one-inch galvanized iron pipe having an actual average internal diameter of 1.064 is shown by curve 2 of Fig. 2.

From this curve, it appears that for a one-inch galvanized iron pipe with water flowing at a velocity of one-half foot per second, the friction-head is a little less than .002 feet for every foot of pipe used.

The equation of this curve is $f_h = .0062 \sqrt{1.80}$ from which the friction-head for a velocity of one-half foot per second can be calculated to be .0018 feet.

In the third series of tests, eight one-inch standard galvanized iron elbows, and 22 feet of horizontal pipe were added to the system employed in the first series of tests; from the results of this series, together with those of the second, the friction-head due to the one elbow was found; it is shown by curve 9 of Fig. 2.

A comparison of curves 9 and 2 shows that the friction-head due to a standard one-inch elbow is about the same as that due to a one-inch pipe 18 inches long, or in other words, equal to that of a pipe having a length of 18 diameters.

A careful comparison of the two curves shows that the ratio of length of pipe equivalent to one elbow is not constant but varies slightly with the velocity of the water. As the velocity increases the length of pipe corresponding to one elbow decreases.

Other series of tests were made to determine the friction-heads due to 45 degree elbows, tees, sleeves, return bends, gate valves, globe valves, and a radiator, with valve and union elbow attached.

The results are shown by the curves of Fig. 2. In order to check the accuracy of the results obtained, a test was made of a pipe system consisting of the constant employed in the first test and in addition of 17½ feet of 1-inch pipe, 1 return bend, 2 tees, two 90-degree elbows, 1 gate valve, and 1 radiator with valve and union elbow.

The friction-heads as calculated from the values shown in Fig. 2 and as determined by the test are as follows:

Calculated.....	.019	.035	.055	.082	.115	.146	.181	.233	.287
Observed.....	.016	.032	.053	.077	.107	.142	.182	.228	.278
Velocity.....	.2	.3	.4	.5	.5	.7	.8	.9	1.0

In a similar way, the friction-heads due to one 90 degree standard galvanized iron elbow and one foot of pipe were determined for ¾ in., 1¼ in., 1½ in. and 2 in. standard galvanized iron pipe.

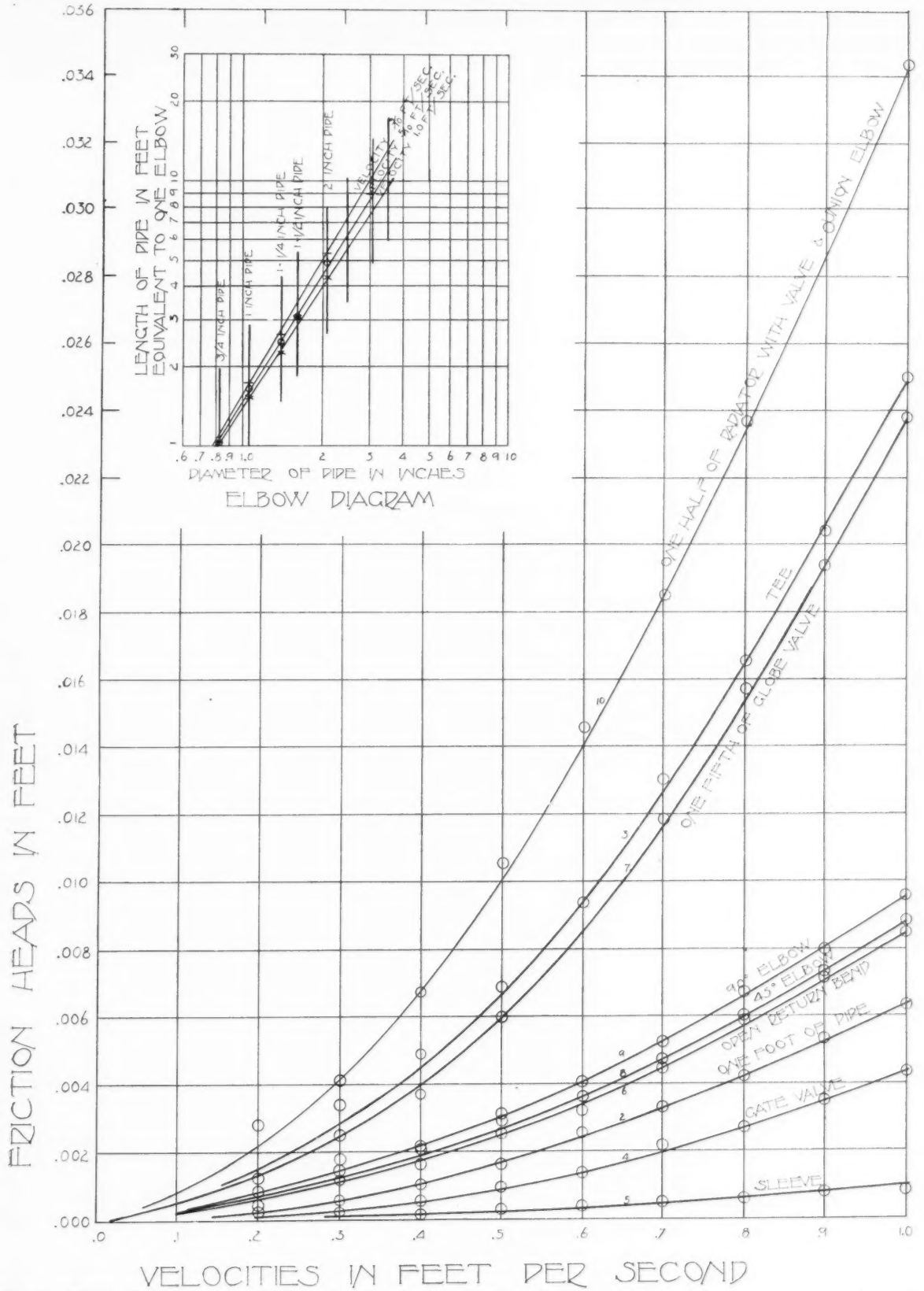


Fig. 2. Friction Heads Due to One-Inch Galvanized Iron Pipe, to One-Inch Galvanized Iron Pipe Fittings, and to One-Inch Valves.

The equations expressing these friction-heads in terms of the velocity of the water for velocities ranging from .20 to 1 foot per second are:

For one foot ¾ in. pipe	.0092V1.84
For one 90 degree ¾ in. elbow	.0094V1.84
For one foot 1 in. pipe	.0062V1.80
For one 90 degree 1 in. elbow	.0095V1.69
For one foot 1¼ in. pipe	.0045V1.85
For one 90 degree 1¼ in. elbow	.0101V1.70
For one foot 1½ in. pipe	.00355V1.86
For one 90 degree 1½ in. elbow	.01075V1.84
For one foot 2 in. pipe	.00284V2.09
For one 90 degree 2 in. elbow	.0122V1.91

From these equations, the length of a pipe having the same friction-head as one elbow, can be calculated for any desired velocity; this was done and the results shown in the upper left corner of Fig. 2; the three lines show the lengths of pipe equivalent to one elbow for velocities of 3/10, 5/10, and 1 foot per second for pipes ranging in size from ¾ inch to 2 inches and since the values for these sizes vary so uniformly it seems safe to extend the lines so as to include 3 or 4 inch and perhaps even larger sizes. An inspection of this diagram shows that a three inch elbow for example, has the same friction-head as 9 feet of 3 in. pipe, when the velocity of the water is one-half foot per second.

The equation of the line showing the ratios, for velocities of one-half foot per second, is L equals 1.47d1.59; L being the length of the pipe in feet and d the diameter in inches.

Similar curves could be constructed for the other fittings but this would involve useless labor.

For practical purposes, a table may be arranged expressing the friction-heads of all fittings in terms of that of a 90 degree elbow. The curves of Fig. 2 modified by tests on larger pipes show that the following ratios may be used:

1—45 degree elbow equals	½—90 degree elbow.
1—open return bend equals	1—90 degree elbow.
1—gate valve equals	½—90 degree elbow.
1—globe valve equals	12—90 degree elbows.
1—tee equals	2—90 degree elbows.
1—sleeve (negligible) equals	1/6—90 degree elbow.
1—radiator with valve and union elbow equals	7—90 degree elbows.

Having found the number of elbows equivalent to the various pipe fittings in a circuit, they are expressed in terms of one foot of pipe and the resulting number of feet added to the actual length in use to determine the equivalent or nominal length from which the friction-head for the circuit can be readily and accurately determined.

HOW A JAPANESE COLLECTED AN OLD BILL.

"That the Japanese are nimble-witted creatures, ready to rise to any situation, was illustrated by an experience of a prominent mercantile firm of San Francisco that recently came to my knowledge," said Julius Kahn, member of the House of Representatives from that city.

"This firm had lately employed a young Jap, a graduate of some big eastern college, as a sort of high-class office boy about the place. One day, in looking over the many accounts due the firm, the senior member came across a bill against a well-to-do business man of the city. It was a bill of considerable size, and, though the debtor was amply able to pay it, he had, despite numerous personal letters soliciting payment, utterly neglected the matter, relying, doubtless, as the senior member thought, on the fact that his custom with the house was too big an item for them to incur his ill will by any harsh methods of collection.

"In a quandary as to just what course to pursue to collect their money and still retain the good will of their debtor, the senior member at a venture called in the young Jap.

"'Here, Lao,' he said, 'Write this man a letter about his bill that will cause him to pay it in short order, and yet not offend him. Use your wits about it, for it's a hard case.'

"Hardly had the senior member settled himself in his office chair the next morning when the tardy debtor came breezing through the door without even stopping to consult the office boy. In his hand he held a check for the full indebtedness, and as he handed it to the senior member he explained in tone cheerily pleasant, though apologetic, how the matter had, through inadvertence, escaped his notice until the reception of the firm's letter that morning; that he hoped his negligence would not make any difference in the pleasant relations between the two houses, and that hereafter he would see to it personally that all indebtedness was promptly settled on the first of the month. Upon which he took his departure.

"The bewildered senior member rang for the Japanese clerk.

"'Lao,' he said, 'what did you write that fellow to bring him around here so swiftly?'

"'I merely expressed some honorable ideas that would be of interest to the honorable gentleman,' said the Jap courteously.

"'Bring me the copybook of letters,' cried the senior member. The Jap brought the copybook. Turning to the imprint, the senior member read:

"'My Dear Sir:—We have the extreme pleasure of informing you that if the inclosed bill of long standing is not paid immediately we will at once take steps that will cause you the utmost astonishment!'"—Exchange.

THROUGH THE SAFETY VALVE.

By H. E. S.

Teddy claims he's got 'em all frazzled;
"Ten to one," says the Bull Moose fan,
These odds, my wits have bedazzled,
But pshaw! I'm no bettin'-man.

Woodrow says it's now all settled,
And the donkeys are backin' his plan
With wagers that hurt a low-mettled,
Strictly non-bettin' man.

Willy Taft at present's not saying
Whether he's glad that he ran,
But the wagers some fellers are layin',
Just sicken a non-bettin' man.

What's the use of baseball and 'lections,
And pool and catch-as catch-can?
They stir nothin' up but dejection
In a strictly non-bettin' man.

The Reason.

"Oh, mother, why are the men in the front bald-headed?"

"They bought their tickets from the scalpers, my child."—Chicago Tribune.

An Analysis of the Plumbing Codes of Thirty-Seven Cities

By Thomes S. Ainge, Sanitary Engineer, Lansing, Michigan

(*Continued from October 12th Issue*)

ROOF DRAINAGE.

THE specifications of the codes relative to roof drainage are shown in the accompanying Exhibit XIII. In one of the codes there are no specifications whatever in regard to roof drainage; in another, no specifications other than the prohibition of the use of leaders as soil, waste or vent pipes; and, in many others, the specifications are lacking in some one or more important particular.

Outlets for Rainwater Drains and Leaders.

There are a number of reasons for a separation of the rainfall and sewage from buildings, chief among which are the following:

Sewers for the reception of both rainfall and sewage are usually made large enough to take care of excessive rainfall, and the dry weather flow in them is often insufficent to render them self-cleaning.

There is a growing demand for the purification of sewage before it is discharged into the rivers, lakes and other natural water courses, and where this is done by means of any of the artificial methods of treatment, as the septic tank or chemical treatment, the handling of any considerable amount of rain water would be costly and, in many instances, impracticable.

Excessive rainfall is a frequent cause of flooding of cellars, and other places in connection with buildings which have sewers for the reception of both sewage and rainfall, for the prevention of which back-water devices, which are often found to be unreliable at the time they are most needed, must be used.

The connection of the rain water drains with the sewers necessitates the use of traps in the former, and these are liable to frequent stoppages and, unless properly water-supplied, to be rendered useless during dry weather and allow of the discharge of sewer air from the leaders, often in dangerous proximity to windows and other openings in the building.

The separation of the rainfall and sewage is not, however, always an easy matter and will usually necessitate the installation of a separate set of drains for the rainfall. There are, however, many instances where the rainfall from buildings may be disposed of on the surface of the ground or in the street gutters, and, in some instances, by means of subsoil drains. In a few instances it may be discharged, without considerable expense, into a ditch or other natural water course nearby.

For the reasons just stated, it is essential that, in planning for the disposal of the rainfall, unless a system of storm-water drains is available, every possible outlet should be carefully studied and the sewer should be resorted to in cases of necessity only.

Where the local conditions are favorable for a general disposal of the rainfall by any of the methods outlined above other than by its discharge into the sewer, the latter method should be prohibited by the plumbing code of the locality, except in cases where this method of disposal may be absolutely necessary. This prohibition is found in but a small number of the codes under consideration, and in a majority of these no alternative method of disposal is given.

Six of the codes very properly specify that leaders are not to be permitted to discharge upon the sidewalks or upon adjoining property, and in the few codes which provide for the discharge of rain water in the street gutters, the specifications are fairly complete.

All but six of the codes provide for the discharge of rain water into sewers, but the point of connection of the drains, or leaders, with the sewer is specified in but eight of these, a majority of which require the same to be at some point on the house side of the main sewer trap.

In view of the growing demand for the abolition of main traps in house sewers, and for the reason that, in a properly designed system of rain-water drains, the connection of the rain-water drains either inside or outside of the main trap in the sewer will not make any particular difference, a revision of the codes in this particular is desirable.

Sizes of Rain-Water Drains and Leaders.

The sizes of rain-water drains or leaders are specified in but eight of the codes, and in seven of these the specifications are indefinite or incomplete in this particular. The specifications of the Washington, D. C., code cover the sizes of leaders of roofs ranging, in groups, from 100 to 5,000 square feet. Similar specifications, modified in accordance with the rainfall in each locality, should be incorporated in every plumbing code.

Materials for and Construction of Rain-Water Drains and Leaders.

Five of the codes contain no specifications relative to the materials for rain-water drains and leaders, and in many other codes the specifications are incomplete. This is particularly true in regard to the underground drains and may be due, in part, to the use of the term "leader" in regard to the entire system of pipes, horizontal and vertical, which are used for the conveyance of rain-water to the sewers.

In the few codes which contain specifications referring directly to the materials for the underground rain-water drains there is a notable lack of specifications covering the details of construction. In certain cases this omission may be due to the fact that the codes contain specifications relative to the construction of the underground sewers, but in such cases the codes should at least specify that the rain-water drains be constructed in accordance with the rules laid down for the sewers of corresponding materials.

In the codes which contain specifications relative to the construction of leaders which pass into or through a building, the specifications are more complete, but there is the usual lack of uniformity and in some instances lack of definition.

Thus the terms "iron pipe," "cast iron pipe," "cast iron soil pipe," "wrought iron pipe," "steel," "lead," "brass" and "copper" may be construed to mean any weight or make of pipe, and one that would not measure up to the standard for soil and waste pipes and would not, therefore, be permissible for leaders of this character.

Again, one of the codes specifies tar or asphaltum coated pipe, two other codes specify that the pipes be

EXHIBIT XIII—ROOF DRAINAGE

LIST OF THE CITIES AND THEIR INDEX NUMBERS.

Every number in this exhibit in bold-faced type stands for a city and shows that the specification after which it appears applies in that city. Thus 4 stands for Chicago; 32 for Syracuse, and so on.

1. Baltimore, Md.
2. Boston, Mass.
3. Buffalo, N. Y.
4. Chicago, Ill.
5. Denver, Col.
6. Detroit, Mich.
7. Fall River, Mass.
8. Indianapolis, Ind.
9. Jersey City, N. J.
10. Kansas City, Mo.
11. Los Angeles, Cal.
12. Louisville, Ky.
13. Memphis, Tenn.
14. Milwaukee, Wis.
15. Minneapolis, Minn.
16. Newark, N. J.
17. New Haven, Conn.
18. New Orleans, La.
19. New York, N. Y.
20. Ohio State Building Code, governing the cities of Cincinnati, Cleveland, Columbus and Toledo, O.
21. Omaha, Neb.
22. Paterson, N. J.
23. Pennsylvania State Plumbing Code, governing the cities of Pittsburg and Scranton, Pa.
24. Philadelphia, Pa.
25. Providence, R. I.
26. Rochester, N. Y.
27. St. Joseph, Mo.
28. St. Louis, Mo.
29. St. Paul, Minn.
30. San Francisco, Cal.
31. Syracuse, N. Y.
32. Washington, D. C.
33. Worcester, Mass.

Outlets for Rainwater Drains and Leaders.

Leaders not to discharge upon sidewalk or adjoining property.—**19-22-23-24-29-32.**

Leaders not to discharge into sewers.—**18.**

Leaders not to connect with sewer system without written authority.—**5-13.**

Leaders not to connect with sewer system within proposed drainage area without special permit.—**2.**

Drains and leaders to discharge into sewer.—**1-3-4-6-7-8-9-10-14-15-16-17-19-20a-21b-22-23-24-25-26d-27-28-29-30d-31a-32a-33.**

Connection of drain with house sewer to be:
- Inside the main trap.—**28-30-31.**
- Outside of main trap.—**1-6-10.**
- On sewer side of last fixture connection.—**27-33.**

Leaders may discharge into upright soil pipe of hydrant cesspool, provided said cesspool does not receive the discharge from waste pipes.—**24.**

Where a sewer is not available, rain water may discharge under certain conditions:
- On the ground, but not so as to cause damage to walls and foundations.—**32.**
- Into terra cotta drains which leach wholly within lot line.—**32.**
- Into street or gutter.—**9-19-22-23-24-32.**
- Into leaching cesspool at least 20 feet from building.—**19.**

Sizes of Rainwater Drains and Leaders.

Not specified.—**1-2-4-5-6-8-10-11-12-13-14-16-17-18-19-20-21-22-23-24-25-27-28-29-30-31.**

Drain to be not less in size than leaders, with minimum of 3 inch diameter.—**3.**

Drain to be equal to size of leaders discharging into it.—**33.**

Drain to be of sufficient size to drain the roofs, surface drains and cellars.—**6.**

Minimum diameter for leaders:
- Two inches.—**9.**
- Two inches for roofs having area of 100 sq. ft.—**32.**
- Three inches.—**7-15-26.**
- Three inches for roofs having area of from 100 to 500 sq. ft.—**32.**
- Four inches for roofs having area of from 501 to 1,500 sq. ft.—**32.**
- Four (?) inches for roofs having area of from 1,501 to 2,500 sq. ft.—**32.**
- Five (?) inches for roofs having area of from 2,501 to 5,000 sq. ft.—**32.**

Materials for Rainwater Drains and Leaders.

No specifications.—**2-10-17-18-33.**

Underground drains:
- May be constructed of vitrified stoneware.—**6-13-26-28.**
- Must be of extra heavy cast iron pipe.—**6e-19f-32.**
- Covered stable gutter, flush with surface of walk, may be used in place of iron pipe to convey rain water to street gutter in cases where the grade is insufficient.—**32.**

Leaders inside of buildings to be constructed of:
- Iron pipe not otherwise described.—**1-20.**
- Cast iron pipe.—**3-13-14-16-19-23-24-26-29-31.**
- Cast iron soil pipe.—**27.**
- Extra heavy cast iron pipe.—**4-5-8-9-21-22-30g-31-32.**
- Extra heavy cast iron pipe, tarred inside and outside.—**15.**
- Wrought iron pipe.—**8-9-13-19-23-24-26-29-31.**
- Galvanized wrought iron pipe.—**4-16-22-30g-32.**
- Tar or asphaltum coated wrought iron pipe.—**4.**
- Standard wrought iron pipe, tarred inside and outside.—**5.**
- Steel.—**19-23-24-26-29-31.**
- Lead.—**1-20-27.**
- Brass.—**1-20-27.**
- Copper.—**20-27.**
- Fittings from wrought iron pipe to be recessed.—**32.**

Sheet iron leaders outside of buildings to have cast iron pipe at base:
- At the grade.—**32.**
- Two feet above the grade.—**22.**
- Two and one-half feet above the grade.—**29.**
- Four feet above the grade.—**4-20.**
- Five feet above the grade.—**13-16-19-23c-24-30h.**
- Six feet above the grade.—**9.**

Connecting joint between the sheet metal and cast iron pipes of outside leaders to be made:

By plumber.—**32.**

By means of of a brass ferrule soldered to sheet metal pipe and caulked with oakum and lead, into the hub of cast iron pipe. Brass sleeves prohibited. Where wrought iron pipe is used instead of cast iron pipe, a solder joint may be used. —**30.**

With Portland cement.—**9.**

Leaders in inner or interior courts, or in ventilating or pipe shafts to be constructed of iron, lead, brass or copper.—**20.**

Leaders in general to be constructed of:

Galvanized wrought iron, brass, or lead, of approved weight. —**1.**

Cast iron.—**7.**

Iron, as required for soil pipe.—**25.**

Materials for and Construction of the Roof Connection of Leaders Which Are Run Inside of Buildings.

Copper or lead with ferrule.—**3-15.**

Copper or lead properly soldered to brass ferrule.—**8.**

Heavy lead or copper drawn tubing, soldered to brass ferrule or nipple and caulked or screwed into pipe.—**4-16-19-21-22-24-29-30.**

Heavy lead pipe, or seamless drawn copper not less than 22 gage, wiped or soldered to brass ferrule or screwed into pipe.—**9.**

Six-pound sheet lead or heavy copper and brass ferrule properly caulked with oakum and lead.—**14.**

Heavy copper-drawn tubing.—**23.**

Brass ferrule caulked to cast iron or screwed into wrought iron pipe and soldered water and air-tight to ferrule.—**6.**

EXHIBIT XIII.—ROOF DRAINAGE—CONCLUDED.

Brass ferrule and eight-pound lead or sixteen-ounce copper extension, properly joined to roof flange of same materials, the latter to be flashed into roof construction.—**32.**
Brass sleeves prohibited.—**30.**
Connection to be slipped into iron pipe to a distance of at least 7 inches.—**23-24.**
Opening to have brass strainer.—**9.**

Trapping of Rain-Water Drains and Leaders.

No specifications.—**13-18-20.**
Trapping required in the case of:
Drains connected with the public sewer.—**4-30.**
Drains connected with house sewers.—**2-3-6-30.**
Drains which run inside of a building.—**10.**
Leaders outside of buildings connected with house sewers.—**15.**
Leaders inside of buildings connected with sewer outside of house trap.—**6-14.**
Leaders which open near a window or light shaft.—**3.**
Leaders which open near a window, door or vent shaft, or so located as to become a nuisance.—**4.**
Leaders inside of buildings which open near a window or airshaft.—**24.**
Leaders having sewer connection which open within 10 feet of any building or adjoining building.—**30.**
Leaders which open within 12 feet of a window or opening.—**8.**
Leaders from low roofs or eaves.—**15-27.**
Leaders from roofs lower than the main roof.—**28.**
Apparently all leaders which have sewer connection.—**3-4-5-7-9-10-17-21-25-26-29-31i-32k-33.**
Traps to be located:
At some point in the drains or leaders not specified.—**2-3-4-7-8-9-10-14-17-21-25-29-30-33.**
Where the drain is connected with the house sewer.—**5-6-9-10-30-31i-32k.**
At base of leaders.—**3-4-28.**
Before entering house sewer.—**15-27.**
In cellar.—**9.**
In cellar or yard.—**26.**
Class of traps specified:
Extra heavy cast iron traps for leaders.—**16-22.**
Cast iron running traps.—**1-19-23.**
Running trap.—**10.**
Cast iron traps.—**24-29.**
Size of traps:
Leader traps to be 3 inches in diameter.—**7-24.**
Running traps to be of same size as the leaders they serve.—**9.**
Depth of water seal of traps:
To be not less than 5 inches.—**24.**
Traps to be set out of the reach of frost.—**1-3-4-9-10-16-19-21-22-23-24-27.**
Traps to be readily accessible.—**9-15-16-22.**
Cleanouts to be provided:
In connection with main trap.—**10-26.**
In connection with leader traps.—**8-26-29.**
Traps to be water-supplied.—**30.**
Fresh air inlet to be provided in connection with main trap for rain-water drains.—**30.**
Leaders from roofs lower than the main roof may be "effectively ventilated" at lower end in lieu of trap.—**28.**
Leaders having sewer connection which open within 10 feet of building or adjoining building to be vented in connection with trap.—**30.**
Trapping may be omitted:
In the case of leaders which connect with house sewer inside of main trap.—**6-14.**
When storm sewers cease to be used for sanitary drainage.—**1.**
In the case of storm sewers.—**30.**
Apparently where leaders do not open within a certain distance of windows, doors, air and light shafts, etc.—**4-8-15-24-26-27-28-30.**
Back-water trap or similar device specified:
As an alternative for the main trap.—**10.**
For leaders connected with the sewer inside of buildings subject to high water or flooding.—**10.**
For all branches of sewer to cellar fixtures where leaders connect with sewer in cellar on house side of fixtures.—**15.**
Overflow to be provided at the curb for rain-water drains which connect with storm-water sewers subject to back-flow.—**30.**

The Use of Leaders as Soil, Waste or Ventilating Pipes.

No specifications.—**2-5-7-10-11-18-33.**
Leaders not to be used as soil, waste or ventilating pipes nor any such pipe used as a leader.—**1-3-4-6-8-9-12-13-15-16-17-19-20-21-22-23-24-25-26e-27-29-30-31-32.**
Leaders from ordinary roofs may evidently act as ventilators for the house sewer.—**28.**
Leaders inside of the building which are connected with house sewer inside of the main trap not required to be trapped and would, therefore, act as ventilators for the house sewer.—**6-14.**
Leaders which do not open within 12 feet of any window or opening not required to be trapped and would, therefore, act as ventilators for the house sewer.—**3.**
Leaders which are gas-tight and do not open near a window or airshaft may, apparently, act as ventilators for the house sewer.—**24.**

Foot Notes.

a. But not into sanitary sewers intended for the carriage of sewage, only.
b. By special permission, only.
c. Where not liable to be damaged, cast iron pipe need not be more than 1 foot above the grade.
d. Where storm water sewers are not available.
e. Except in case of refrigerator connections in cellar.
f. Where they discharge into a leaching cesspool.
g. Where the leaders exceed 55 feet in height.
h. Excepting where galvanized wrought iron pipe is used.
i. Traps may be dispensed with when so ordered.
j. When laid under or within 5 feet of building, or under sidewalk.
k. Two or more adjacent small leaders may discharge into one trap; a small leader may discharge into trap of large leader; a small leader may be connected in above trap of area drain, or vice versa.
l. Where connection of house sewer is inside of main trap.

coated with tar "inside and outside," six codes which specify galvanized wrought iron pipe, but a large number of the codes which specify cast or wrought iron pipe contain no specifications relative to any such protection against corrosion.

Again, in the sixteen codes which specify wrought iron pipe as a material for leaders, a most important requirement has been overlooked in all but one code, viz.: the use of recessed fittings.

Again, in the twelve codes which contain specifications relative to the use of cast iron pipes for the protection of the lower ends of the leaders outside of buildings, the height to which the cast iron pipes should be carried above the grade is variously specified and ranges from the grade to six feet above the same, with a majority specification of five feet.

Again, in the matter of jointing of the sheet metal pipes with the cast iron pipes just referred to, all but three of the twelve codes are silent, one of these does not specify the material which must be used, and the methods of jointing specified in the other two codes are as different as daylight is from darkness.

In the matter of the roof connection of leaders, which are located inside of buildings, eleven codes contain specifications which are fairly complete, four codes contain incomplete specifications and seventeen codes contain no specifications whatever upon this point.

Roof gutters are frequently littered with leaves from

adjacent trees, and with straw and other materials carried to the roofs by birds, and these materials may be washed into the leaders by heavy rains and possibly be the means of stoppages in the traps below. This contingency is recognized in but one of the codes which specifies that the roof openings of leaders must be provided with brass strainers.

Trapping of Rain-Water Drains or Leaders.

In the matter of the trapping of rain-water drains and leaders, more than a passing comment upon the specifications is necessary, and this phase of the subject of roof drainage should very properly be considered in connection with the general arrangement of the underground drains and sewers.

As a rule, wherever possible, the rain-water leaders should have but one connection with the house sewer and but one trap, arranged in much the same manner as the sewer and its branches. The connection should preferably be made at some point beyond the last branch in the sewer from a soil or waste pipe, and should be the outlet not only for the rainfall, but, wherever practicable, for the subsoil and surface water. This would reduce the possibility of stoppages to the minimum, and where the trap is water-supplied, prevent the leaders, surface openings, etc., from acting as ventilators, for the sewer. Where this arrangement is not practicable, as many of the leaders as possible should be made to converge to one point and connect with the sewer through a single trap, which should be properly water-supplied and so placed as to be readily accessible and out of the reach of frost.

An untrapped or poorly trapped leader, which ends under the lower part of a pitched roof, may become a source of danger to the inmates of the building by the discharge of sewer air into the attic space or into a nearby window, while a leader which terminates in a flat roof at a proper distance from a door, ventilator, chimney or other opening in a building may, when properly constructed, be allowed to act as an auxiliary ventilator for the sewer during the time it might not be closed by frost or snow.

Of the codes under consideration, all but three contain some specifications relative to the trapping of the rain-water drains and leaders, but many of these are not sufficiently comprehensive and begin and end with the mere statement that the drain or leader must be trapped at some point. This is particularly true in regard to the location, class, sizes and depth of the water seal of traps; the provision of access openings; and the protection of the water seals of the traps against loss by evaporation.

Three of the codes contain specifications covering the subject of back-watering in the rain-water drains, two of which provide for the use of back-water traps or similar devices. Where back-watering is liable to occur in a sewer, the use of a back-watering device would be necessary to protect the building against the entrance of sewage through cellar and other openings upon the lower levels, but if properly constructed the provision of special back-watering devices for the rain-water drains would be of secondary importance.

The Use of Leaders as Soil, Waste or Ventilating Pipes.

Notwithstanding that a leader may be constructed of the same materials and in the same manner as a soil, waste or ventilating pipe, and terminate at the roof at a safe distance from any opening through which sewer air could gain access to the interior of the building during the winter months, it would be very likely to be closed by frost and snow and would not, therefore, be suitable for the vertical stack of plumbing fixtures or the outlet for vent or revent pipes which should be open at the top during all seasons of the year. This fact is recognized in twenty-four of the codes which prohibit the use of leaders for the purpose of soil, waste or ventilating pipes and the use of such pipes as leaders. Three of these, however, permit the use of leaders as ventilators for the sewers under certain conditions.

(To be continued.)

A MIGHTY NIMROD IN THE PLUMBING TRADE.

The accompanying illustration shows F. J. Stahl returning from one of his recent hunting expeditions. Mr. Stahl conducts a successful plumbing business at 506

F. J. Stahl, of St. Paul, Minn.

St. Peter Street, in St. Paul, Minn., and he has not only a good eye for business but also a keen eye for shooting, as the picture shows.

Why, Indeed?

"Patriotism," said Upton Sinclair at a dinner in Arden, "is dying out. Internationalism is succeeding it. Today we don't merely love our country—we love all countries.

"A captain was training a band of recruits.

"'Phillips,' he said to a red-haired chap, 'why should a soldier be ready to die for his fatherland?'

"Phillips nodded approvingly.

"'That's just what I say, cap,' he cried. 'Why should he, indeed?'"—Birmingham News.

Herbert stood on a chair. The chair stood in the pantry. The jam stood on the shelf. Herbert's mother stood on the threshold. Herbert stood his ground. "My son," said the mother, pointing at him with astonishment, "I am s-u-rprised! To think that my little boy would do a thing like that." Herbert, resourceful and not at all abashed, looked his mother straight in the eye. "Please do not interfere with the minuvers of a boy scout," he said. "A boy scout?" "Yes, mother, after supplies."— Popular Mechanics.

Farm Paper Writer Urges Sanitary Plumbing by Plumbers

NOT all the writers in the farm papers are suggesting that the farmer do his own plumbing. Those writers who have had experience with the problems of the farmer know him to be a man of many parts, to a certain extent a jack-of-all-trades, but mostly expert in things to which he has given years of study and which come in his regular daily work.

Knowledge of sanitary plumbing methods is a thing that should be encouraged—the farmer, taken as a whole, does not come in intimate contact with good and bad plumbing often enough to realize many of the differences.

Confidence is necessary—education is necessary—if we are to spread the doctrine of sanitation where it should be best known, and where the buyers of plumbing, heating, water and lighting systems have the money to buy. Confidence is a business asset—let us then inspire the confidence of the farmer as well as his city brother.

Here, in part, is the article by Architect William Draper Brinckle, in a recent number of Farm and Fireside:

The Plumbing of Country Homes.

Too many country homes have either no sanitary system whatever or one that is worse than nothing; for bad plumbing is one of the most dangerous things conceivable. In the cities, all these matters are strictly regulated by law, and looked after by plumbing inspectors and health officers; but it's different in the country. So, if you will attend a moment, here's just a little talk on plumbing, and so forth.

No bathroom is really complete without a water-closet. In that case, you will need water under pressure, and a proper sewage system; and you will also need the best and most reliable plumber you can get. Don't attempt to put in this sort of work with your own hands. A defective joint, that looks fair enough to you, may nevertheless leak sewer-gas and cause a mysterious outbreak of illness in your family; or a water-pipe improperly protected against frost may burst and do one hundred or two hundred dollars' worth of damage to the furniture and fittings of your house. Smaller leaks will be constantly occurring in an "amateur" job; and they are often frightfully troublesome to fix. Above all, don't get some local jack-of-all-trades, who can "turn his hand to anything," to put in your plumbing, even if he offers to do it for half-price! There is no other branch of house-building (save perhaps the heating and the electric wiring) where an unskilled workman can put your property and your life in such jeopardy. If you can't afford to pay a good man to do a good job, give up the whole thing: it's far too serious a matter to trust in incompetent hands!

The best type of water-closet is the "syphon jet." The "syphon action" is very similar and nearly as good; the "washout" is a little older style, but still quite satisfactory. All these should have low tanks; the old-fashioned high tank, set up at the end of a five-foot pipe, is much more apt to get out of order, and also, of course, much more difficult to get at.

In setting these closets, a short brass pipe with screw threads cut in it is fastened to the bottom with melted lead; a corresponding brass pipe is fastened to a short bit of lead pipe, also with melted lead, and then the lead pipe is joined to the iron soil-pipe. Then the closet is screwed down in place, by means of the two brass pipes. To use putty, white lead or cement to join a closet to a soil-pipe, is absolutely forbidden by the plumbing laws of all large cities, and rightly so.

From the closet, a line of cast-iron pipe, not less than four inches inside diameter, runs down to the cellar and thence outside the house; this pipe must be what is known as "extra-heavy" and all joints are filled with melted lead; not cement! Just under the closet a special S-shaped bit of pipe, called a "trap," is set; some water always lies in this, keeping sewer-gas from coming up. A vent-pipe is cut into the upper bend of the trap, and from there continues on up through the roof of the house; this not only permits the sewer-gas to escape harmlessly, but, by letting in air, keeps the trap from "syphoning" or emptying itself whenever a strong rush of water passes through.

But just a word of caution here: It is an extremely bad plan to buy your own plumbing fixtures directly. If anything doesn't work properly afterward, you have no redress; your plumber will insist that it's all the fault of the fixtures, while the concern you bought them from will blame it all on the plumber who put them in! The only safe way is to let your plumber furnish all the fixtures himself; you can select, beforehand, the ones you want from his illustrated catalogues. If you prefer, you can go to the showrooms of some large plumbing-fixture concern in the nearest big city and pick out exactly what you want; but always let your plumber attend to the actual buying and shipping of the things you have chosen.

"But I can buy things for half the price out of a catalogue!" you say.

Yes, no doubt; but just listen a second; some makers of plumbing fixtures have an extremely cheap line (which doesn't appear in their own catalogues) called "competition goods." These are meant for the cheap rows of houses that are built to "sell," and therefore it's only needful that the fixtures last long enough to get the house sold and the money paid over. These fixtures seldom bear the maker's name; they are sold by middlemen, who "guarantee them to be just as represented; if on arrival you find them otherwise, return them at our expense, and we will refund money." Exactly; but this competition stuff is always very beautifully finished up, on the outside, and until it is put to the test of actual use the average man can't possibly see any difference between this worthless junk and really high-grade goods. Therefore, many guarantees don't amount to much. It's precisely as if a man were to "guarantee" garden-seed, provided you made the claim within forty-eight hours after receiving the seed!

But all reliable fixtures have a printed slip pasted on them, bearing not only the maker's name, but also his guarantee: "Material and workmanship guaranteed for two years," or for five years, according to the price. If the label isn't there, then the fixtures are worthless.

The outside of the bathtub will be primed with a dark coat of paint; see that your plumber gives it a finishing coat of white enamel paint the last thing. The inside of the tub is porcelain enameled.

A few years ago stationary washstands had marble slabs and backs; but now the whole thing—basin, top and back—is all in one piece of enameled work.

The washbasin and the bathtub should have lead pipes run from their waste connections over to the water closet soil-pipe; and, of course, a trap is set directly under

each. These traps must either be non-syphoning or they must have a vent-pipe to keep them from syphoning out. After all the pipe (water and waste) has been put in, but before any fixtures are set, the plumber must test it; he closes all openings, connects his air-pump, and works away until his gage shows quite a little pressure. Then he waits for a few minutes; if the gage drops back, even an ounce or so, that shows his work isn't properly done; and he must hunt out and stop the leak.

A kitchen sink is an extremely great comfort; it should be enameled, with an enamel back. The drain board, however, had best be of wood; it's not so hard as enamel, and therefore less likely to crack dishes that are dropped on it.

A pair of stationary wash-tubs or "laundry trays," as the plumber will call them, should also be specified. These may be had in slate, soapstone, enameled iron, brown earthenware or concrete; there is really very little to choose, save that the earthenware or the enameled iron are a trifle easier to keep clean. Wooden lids cover the tubs and make a most convenient ironing-bench; be sure to insist on this feature.

But these fixtures require water under pressure; therefore, one must have a water-system. Probably the best is the air-pressure tank; this sets in the cellar, or any other convenient frost-proof place. By means of a specially constructed pump, air is stored in the tank, together with the water, at a fairly high pressure; this compressed air forces the water through the pipes to the different fixtures. Handpower can be used to work the pump, if desired, though a windmill or a gasoline engine will naturally be more convenient.

Another water-system uses the ordinary open wooden tank; this system gets its pressure, of course, by the force of gravity, and therefore the tank has to be set well above the highest fixture. This tank can be filled by windmill, gasoline engine, hydraulic ram or handpower.

Often the tank is put up on an open tower; but then the pipes run great risk of freezing, no matter how warmly they may be packed. The best place is probably the attic of the dwelling-house; but a large tin-lined box should be set underneath, to catch the water in case the tank springs a leak.

For hot water, a large galvanized iron boiler stands in the kitchen, connected by a pipe-coil to the cook-stove; then, hot-water pipes run to bathtub, wash-basin, sink, wash-trays, and so on.

There should be two or three spigots ("wash-paves" as they are called) at various points on the outside of the house, to connect on a garden-hose; and it's a good idea to run one pipe over to the stable, too. Special frost-proof hydrants can be bought; and, of course, the pipe will not freeze, if it is laid sufficiently far underground.

When you have decided to put in a bathroom or other plumbing, by far the safest way is to consult an architect or sanitary engineer, and have him prepare your specifications; but, of course, there are cases where this isn't practicable. The next best thing, therefore, is to go to a really competent, reliable plumber, and let him bid on your work, stating in his bid exactly what he means to furnish. The form will be something like this:

Dear Sir:

I agree to furnish and put in place, complete, in your residence, the following fixtures:

One "Fenno" bathtub, Plate 265A.

One "Hammond" closet, Plate 541A.

One "Ardon" lavatory, Plate 430A.

One 18x24-inch enameled kitchen sink, without drain-board or back, but with brass bibs.

One 30-gallon "Anco" boiler, with range connection.

Two brass wash-pave cocks.

One Fig. 444 "Castle" Water System with 36 x 10 tank.

I will supply all plumbing, material and labor and do a first-class job (guaranteeing against defects of workmanship or material for two years) for the sum of ——— dollars.

Signed, Paul Piper.

The plate numbers refer to the catalog of some particular manufacturer, and indicate precisely the fixtures you have selected.

Now, it's perfectly proper for you to get a bid from one or two other good plumbers, using the same plate numbers; but it's rankly dishonorable to give out the first man's figures and ask the others to "beat that." This is sometimes done, I know; but, aside from being dishonorable, it's also very foolish. The plumbers will instantly lose all respect whatever for a man who "peddles around" a bid like this; they consider that he is trying to "do" them, and therefore they feel perfectly justified in "doing" him. And remember that you are absolutely and entirely at your plumber's mercy (unless you have a supervising architect or engineer to oversee the work); he can skin you most beautifully, if he chooses, and you can't prevent it! For can you tell the difference between "heavy" and "extra heavy" pipe? Do you know a "wiped joint" when you see it? And why, please, is an "eighth-bend" so much less likely to get stopped up than a "sanitary-tee."?

THE HEATING QUESTION.

He used to be an optimist; he said the world was bright;
If anyone disliked the day, he bragged about the night.
A broken leg was balm to him—he got it in a wreck—
He said he thanked his lucky stars it hadn't been his neck.
He used to scatter sunshine and essay a happy role—
But,

His neighbor
Has a cellar
Full of coal.

He used to greet the world with smiles; he'd lavish words of cheer
On every unfortunate who tried to shed a tear.
He used to jolly all the ones who talked about their gloom.
And people said he'd still be gay if going to his doom.
He used to crack a merry jest, and seemed a lively soul,
But,

His neighbor
Has a cellar
Full of coal.

The frost is on the window where he gazes at the world;
His bannerets of happiness have long ago been furled;
He stands in moody silence, and his countenance is tense
The while he gazes bitterly across the neighbor's fence.
He used to swear he reveled in the breezes from the pole,
But,

He hasn't
Any cellar
Full of coal.

Wilbur D. Nesbit in "The Chicago Evening Post."

QUESTIONS AND ANSWERS

HOW TO CHECK WATER SUPPLY FOR TWO FLOORS SEPARATELY.

Editor, "Domestic Engineering":—Two kitchen sinks, one on each floor, cold water to both with check and waste in ground with shut off rod to each, one water meter for both, to be located on first floor.

Problem, to run the pipe to both so water will go through meter and have check and wastes work separately and still prevent freezing of water on first floor when it is vacant but second floor is occupied.

Illinois. F. L.

Fig. 1 illustrates a method of running the piping so that either floor may be shut off independently and the water drained from same. It will be necessary to protect the meter and piping from freezing. The water in the meter can be drained by shutting off the stop and waste in the supply on the service side, and opening the drain cock. The water company may require the meter to be set in a pit, in the ground, and the pit made large enough to permit of easy access for repairs, etc.

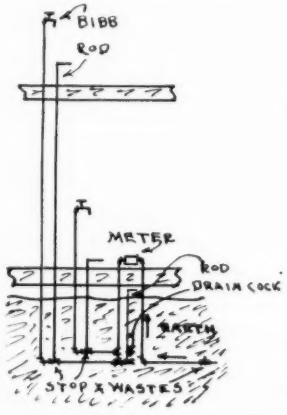


Fig. 1.

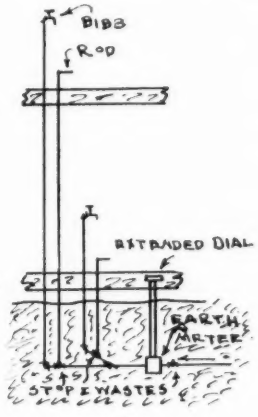


Fig. 2.

Fig. 2 illustrates the use of a meter with an extended dial. This partially eliminates the possibility of the meter freezing, as might happen with the arrangement shown in Fig. 1. A pit may also be required for this installation.

AN UNUSUAL RANGE BOILER INSTALLATION.

Editor "Domestic Engineering": Herein is a crude drawing (Fig. 1) of a job that we would like to know about. Will it work this way, or if not, how could it be done?

Louisiana, Mo. J. W. Caldwell & Bro.

In a recent number of "Domestic Engineering" a similar problem was presented and answered. Hot water naturally rises from the water back and the range boiler is simply a storage for it. Consequently the higher the hot water pipe is extended above the water-back, the better the circulation. Taking hot water from the top of the loop will free it from the accumulation of air and steam.

Such an installation would not prove very satisfactory.

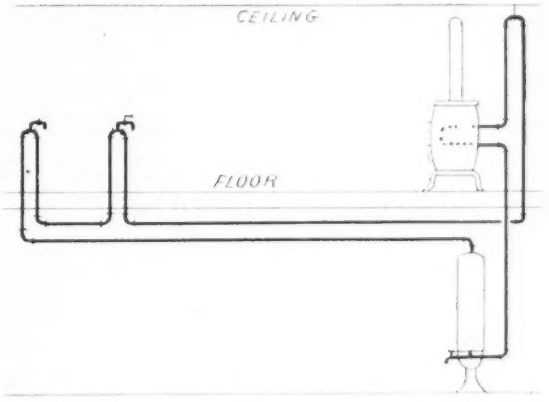


Fig. 1.

It would be much better to construct a partition around the piping and range boiler, if its use near the stove was thought unsightly.

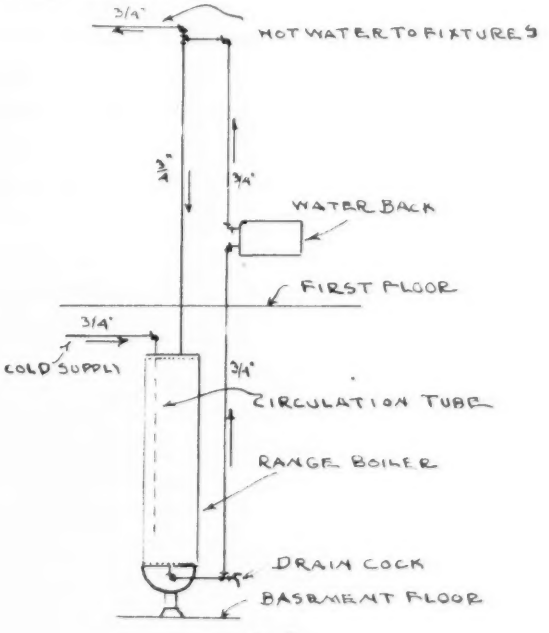


Fig. 2.

The plan outlined in the accompanying sketch (Fig. 2) would prove fairly satisfactory, if it is absolutely necessary to place the boiler in the basement.

If the man who does plumbing is a plumber, why is not he who does heating a heater?

BUSINESS AND BASEBALL—THE BONEHEAD PLAYER.

By Thos. G. Wade.

Do you know what a boneheaded player is in baseball parlance? Probably you do and have never stopped to analyze and put it in words, beyond this expressive, American slang phrase.

A boneheaded player is a man who, when it devolves upon him to make a play under the stress of baseball action, fails to concentrate. He has eight other members of his team and from one to four of the opposing team in his head. By the time he has brought his mind to a realization of the proper play his judgment is either faulty or lacks the courage of his convictions and hesitating, is lost. He scatters. There is but one thing to be done—he knows it; he should have thought it out beforehand, anticipated it, looked for it and executed it without hesitation, with precision, without haste. His problem should have dealt with two or three instead of ten or twelve units. He hesitated, then plunged at something which it was obviously impossible for him to accomplish.

So it is in business, especially in the contracting business. Do you think that Morgan, Hill or Harriman ever put a bunch of money in their pockets and started out to buy a railroad? I guess not. Do you think any one of these big men ever started out just to make a deal? Just to do some business? You may bank upon it that they did not. They started from some very definite, clearly understood point to acquire some very particular railroad or some very particular job at a very particular price. And just as surely as they do that now they did it back in the old days when they dealt in hundreds of millions.

Are you one of those contractors who are scurrying around in a circle—stabbing weakly at this job and that—making ruinously low prices in an ineffective effort to land one? Are you one of the boneheads of the game who, blindly shutting his eyes, tosses the ball into the air in the wild hope that it will fall in the right man's hands? Are you?

It is hard, almost impossible, to get a ball player to admit a boneheaded play; he will be making excuses that sound somewhat logical, but he will know.

It is harder to get a business man who plays a boneheaded game to admit it, but down in his heart if he is smart, he has come to a realization of it. Yet the cure for bone-headedness of this particular variety is largely the cultivation of nerve, confidence and judgment.

Do you want business? Pick out the job you want. Are the odds too big against you? Choose the next best; not the next easiest to get, but the next best—go after it. Figure your cost carefully, put it all down, include your overhead, add your profit, foot it up, and go out to sell it. Get up to the man or men who are going to buy it; tell them about it; show them your cost, if necessary. Never mind the other fellow; if you have done this much well the other fellow is either going to be too high to be right or too low to be safe—you've got a big inside. Do this with all your jobs; don't try for more than you can go after; don't say you can't, shrug your shoulders or do the half dozen things that let you down easiest, then yell "wolf" because some man "stole" a job at a big price or took one at a ruinously low figure. Anybody can get business on a low price basis—your bookkeeper, your stenographer, your mechanics, your office boy; what right have you to expect to boss, to hire them, if you can't do more, much more than that?

What are you doing to justify your name on the front window? You had a certain amount of nerve, a certain amount of sense and a certain amount of judgment to get where you are—now are you going to play the game or do you simply hope to sit on the bench until you wear out? And doing this do you expect to be in condition to make a hit when a hit means a win? It's the fighting men who break up the games. It's the fellows up to their neck in the fight who put over the best ones; they haven't time to worry about trifles; they're after some very definite thing, in a very definite, determined way and they usually get enough hits to make their average something worth while. They're not worrying about anybody else uselessly. They know they're going to get the best of somebody, they know they're going to win at somebody's expense, but their attention is on the job to be done, not upon the prospective loser.

A batter can't ignore the pitcher any more than a business man can ignore his competitor. But at the critical moment he can't look at anything but the ball, nor think of anything but hitting it any more than a business man can think of anything but how to get the job. The competitor comes into it only as an obstacle to be removed. The hit is what you want, the defeat of your competitor is a natural consequence—and remember—nobody ever batted a thousand.

NEW BUSINESS VENTURES.

Storm Lake, Ia.—D. H. Nylander has opened a plumbing establishment here.

Chicago, Ill.—The Advance Heating Co. has been incorporated with a capital of $2,500 to install steam and hot water heating systems. The incorporators are: Marcus Weil, Otto W. Jurgens and C. C. Erickson.

New York, N. Y.—The Davidson Plumbing and Supply Co., 329 E. 92nd Street, has been incorporated with a capital of $10,000, to conduct a plumbing business. The incorporators are: Joseph C. Abramson, Paul A. Junker and Manuel E. Davidson.

Sheboygan, Wis.—The Sheboygan Plumbing Co. has been incorporated with a capital of $5,000. The incorporators are: J. J. Ramaker, Gotlieb Marz and Frank Guenther.

Thomas A. Edison was explaining to a reporter the part played by M. Branly, the new French academician, in the discovery of wireless telegraphy.

The poor reporter, a little bewildered by all the talk about Hertzian waves, transmitters, volts, ohms, and so forth, ventured on a question that made Mr. Edison smile.

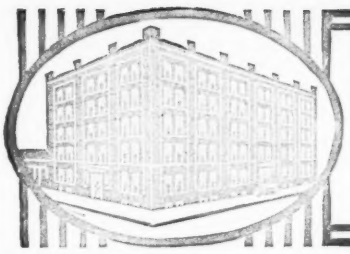
"That question," he said, "reminds me of the city father who rose and said:

"'Mr. Chairman, I'd like to know, for my constituents' benefit, whether this here proposed hydraulic pump is to be run by steam or electricity.'"—"Ideal Power."

"What time is it?" asked the strong-arm man late at night as he met a prosperous-looking gentleman in a dark street. The ex-football tackle landed heavily on the footpad's solar plexus. "Just struck one," he said. "Gee!" murmured the crook as he tried to push the stars out of his eyes, "I'm glad I didn't meet that guy an hour ago."—Mirror.

Mrs. Snoozer—Henry, the alarm clock has just gone off.

Snoozer—Thank goodness! I hope the thing'll never come back.—"Popular Mechanics."



News of Interest Among the Wholesalers and Manufacturers

INTENDS TO MANUFACTURE BATHTUBS IN UTAH.

C. Henry Smith, of Butte, Mont., is reported to be planning the establishment of a factory at Salt Lake City, Utah, for the manufacture of bathtubs.

WILL MANUFACTURE GAS HEATING SYSTEMS.

The Rector System Gas Heating Co., of San Francisco, Cal., has been incorporated with a capital of $500,000, to manufacture gas heating systems. The incorporators are: M. E. Wooster, A. R. Wooster, W. G. Banning, M. J. Dewey and A. D. Moore.

DEATH OF JOSEPH BUTTERWORTH.

Joseph Butterworth, president and founder of the Butterworth Supply Co., 121-123 North Sixth Street, Philadelphia, died at his home in that city on Tuesday, October 22, from heart disease, in his 55th year. He is survived by a widow and one son.

WILL MANUFACTURE STEAM HEATING BOILERS.

The Decarie Safety Boiler Co., has established a new plant between Nineteenth and Twentieth Streets in Portland, Ore., for the manufacture of steam heating boilers. Roderick Maclay is president, and F. L. Decarie is vice-president and general manager of the new company.

CHANGES IN THE OFFICERS AND BOARD OF DIRECTORS OF THE JOSEPH DIXON CRUCIBLE CO.

At the regular monthly meeting of the board of directors of the Joseph Dixon Crucible Co., Jersey City, N. J., held Monday, October 21st, the following changes in the officers and board of directors were made on account of the death of Vice-President William H. Corbin: George E. Long, former treasurer, was elected vice-president to succeed Mr. Corbin; J. H. Schermerhorn, former assistant secretary and assistant treasurer, was elected to membership in the board of directors and treasurer of the company; Albert Norris was elected to the office of assistant secretary and assistant treasurer.

PERSONAL MENTION.

A. G. Cripps, vice-president and sales manager of the Prudential Heating Co., Akron, O., was a visitor at the office of "Domestic Engineering" this week. Mr. Cripps, with his wife, has been spending a week or so of delightful October weather with the former's parents near Albion, Iowa, where the frost is now kissing the pumpkin, and the fodder's not yet in the shock. His parents will in a few weeks celebrate their sixtieth wedding anniversary, and are both still hale and hearty.

* * *

W. H. Bright, representing the Warren Water Heater Co., of Sheldon, Ia., arrived in Chicago this week. He will remain here four or five weeks looking after the interests of his concern. He reports business good with his company.

WILL BUILD MOLDING SHOP AND SHIPPING ROOM.

The Utica Heater Co., of Utica, N. Y., has had plans prepared for the construction of a new molding shop and shipping room. Both buildings will be constructed of hollow tile.

NEW TRANSPORTATION LINE OF VITAL IMPORTANCE TO THE PLUMBING AND HEATING TRADES.

The general plumbing and steamfitting trade tributary to the Ohio and Mississippi Valley, are deeply concerned in the announcement this week of the formation of a $3,000,000 transportation company, which will operate regular freight and passenger boats and lighters between Pittsburgh and New Orleans. This service is to start December 2nd next, and its ultimate result will be the saving of hundreds of thousands of dollars annually to the buyers of plumbing goods.

The first freight boat for New Orleans will leave Pittsburgh the afternoon of December 2nd. As soon as this announcement was made, reservations for tonnage space was made by a number of large plumbing supply houses and manufacturers of plumbers' supplies in the Pittsburgh district. A considerable amount of this freight will go into the New Orleans market.

In the Ohio and Mississippi Valley, between Pittsburgh and St. Louis, those plumbers making a specialty of steamfitting are being advised of this new transportation service, and the supply houses report a number of orders, which specify water transportation. The freight rate is far below that charged by the steam roads, and the service in these valleys will only require days, where the rail route, with its numerous transfer points and junction lay-overs require weeks to make deliveries.

For several years past, the larger master plumbing establishments in the Greater Pittsburgh district have been going after all the large jobs in the Ohio Valley. Because of the lack of water transportation facilities, most all of these materials have been sent to the jobs by rail. However, through the purchase of a battery of six 300-foot river steamers, and smaller boats that will care for local trade between Pittsburgh, Wheeling, Marietta and Cincinnati, all shipments of plumbers' materials will hereafter be made by water.

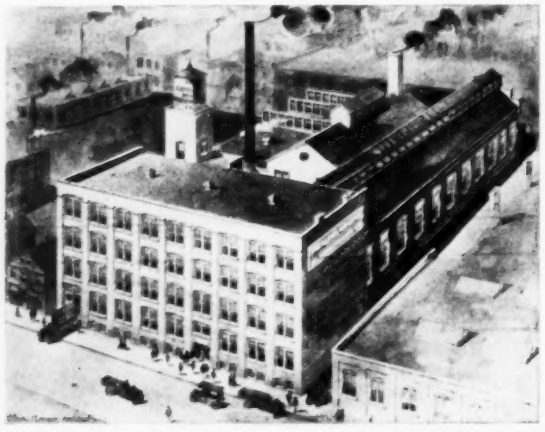
Plumbing supply concerns, and hardware dealers in

the smaller Ohio Valley towns will hereafter make greater use of the waterways than ever before. The saving of such large sums in freight rates will be counted in the profit columns at the end of the fiscal years, instead of showing up as "freight charges."

WILL MOVE INTO NEW PLANT.

The new addition to the factory of the Cleveland Brass Mfg. Co., on Hamilton Avenue, Cleveland, Ohio, will be ready for use within a week or so. This is a four-story and basement building, thoroughly fireproof, and second to none in the country for the purpose. The office arrangement will be particularly unique, and in style and finish is a delight to the eye.

This new addition will increase the floor space of the plant by thirty thousand feet and enable the company



Cleveland Brass Mfg. Co's. New Plant at Cleveland, O.

to increase its output materially without being cramped for room. The addition represents an investment of $50,000 exclusive of new machinery and equipment.

The Cleveland Bronze and Brass Works was established in 1892, reorganized in 1906 and incorporated in 1912 as the Cleveland Brass Mfg. Co. They specialize in ground key work and have built up a large business in this line.

Announcement cards informing the trade of the change in firm name are being mailed to those interested.

LAST YEAR'S PRODUCTION OF LEAD GREATEST IN THE HISTORY OF THE INDUSTRY.

The final figures of lead production in the United States in 1911, just issued by the United States Geological Survey, show an output of 486,976 short tons of refined lead, which is 16,596 tons ahead of the best preceding record—that of 1910. Missouri was the largest producer, furnishing nearly 45 per cent of the domestic pig lead. The growth of the lead industry in the United States in recent years has been continuous and rapid, as is shown by the following figures:

Production of Refined Lead in the United States, 1880-1912.

	Short Tons.
1880	97,825
1890	161,754
1900	377,679
1910	470,380
1911	486,976

The total production of lead since the beginning of mining has been 10,040,704 tons. In 1911 the gain in lead production was made wholly by domestic lead, the output of foreign lead smelted or refined in this country having decreased 14,419 tons.

The Geological Survey's report on lead for 1911, compiled by C. E. Siebenthal, is issued as an advance chapter from the volume "Mineral Resources," and copies may be obtained free of charge on application to the Director of the Survey, Washington, D. C. A remarkably close estimate of the lead production for the year was made by Mr. Siebenthal on January 2, 1912, which has proved to be correct within one-ninth of 1 per cent.

RECORD-BREAKING OUTPUT OF COPPER.

The year 1911 was one of prosperity for the copper industry, both smelter and refinery outputs being the largest in its history, according to a report by B. S. Butler, just issued by the United States Geological Survey as an advance chapter from Mineral Resources of the United States for that year.

The average price of copper for 1911 was 12.5 cents a pound, slightly below the price of 1910, but near the close of the year the price advanced, the average for December being 13.71 cents a pound. Metal-market conditions continued to improve till the average price had risen, in July, 1912, above 17 cents a pound, the highest price since the panic of 1907.

The smelter production of copper in the United States in 1911 was 1,097,232,749 pounds, or 56 per cent of the world's production, but while the production surpassed that of 1910 by 8,995,317 pounds, the value of the 1911 output was but $137,154,092, compared with $137,180,257 for 1910.

The following table shows the mine and the smelter output of 9 leading copper-producing states and Alaska for 1911:

Production of Copper in Leading States in 1911, in Pounds.

State.	Smelter returns.	Mine returns.
Arizona	303,202,532	306,141,538
Montana	271,814,491	272,847,705
Michigan	218,185,236	291,840,201
Utah	142,340,215	146,960,827
Nevada	65,561,015	67,377,518
California	35,835,651	36,316,136
Alaska	22,314,889	27,267,878
Tennessee	18,965,143	18,850,276
Colorado	9,791,861	8,024,488
Idaho	4,514,116	5,152,937

In 1911 twenty-one states and territories contributed to the copper production, but the three leading states (Arizona, Montana and Michigan) produced 72 per cent of the total output. Arizona produced more than 27 per cent of the output for the year, Montana slightly less than 25 per cent, and Michigan nearly 20 per cent. Utah took fourth place, with an output of nearly 13 per cent of the 1911 production. The six leading states in 1911 (Arizona, Montana, Michigan, Utah, Nevada and California) produced 94.4 per cent of the output for that year, and the same states have produced 95 per cent of the total output since 1845. Alaska produced the highest-grade ore in 1911, an average yield being 19.77 per cent of copper; California was second, with 3.67 per cent; Arizona was third, with 3.57 per cent; and Montana was fourth, with 3.13 per cent.

In the report Mr. Butler gives both a geologic and a metallurgic classification of copper deposits, summarizes the geologic occurrence of ores, briefly discusses the conditions affecting production in the principal districts of the country, and gives the tenor of the ore from the chief producing districts. The report on the production of copper for 1910 contained a map showing all the principal copper-producing districts of the United States

and the location of the principal reduction plants. That report, as well as the one for 1911, can be obtained on application to the Director of the United States Geological Survey.

KELLY OCTOPUS WATER CLOSET SYSTEM.

Thos. Kelly & Bros., of 422 45th Court, Chicago, are the manufacturers of the Octopus water closet combination, being intended for use in public buildings, such as schools, factories, office buildings, hospitals, barracks, forts, asylums, prisons, public comfort stations, etc.

One of the latest adaptations of this combination is its use on different floors of the same building, utilizing one stack of soil pipe for all fixtures. These Octopus fittings can be furnished with revents where required by plumbing rules.

"MET-ALL" TANK, "FIBRO" SEAT.

The Columbus Brass Co., Columbus, O., have been doing a large business in their closet combinations. The "Met-All" non-sweating tank has attracted much attention. It is lined with 10 oz. copper, has china handle flushing lever, mastiff ball cock, N. P. brass supply pipe and 2-inch N. P. flush ell. The entire tank is of metal, except the specially prepared filler between the waste reservoir and shell. The outside is finely finished with

The "Met-All" Tank and the "Fibro" Seat.

a sanitary white enamel, which is easily kept clean. Lead, zinc or brass linings can be furnished if preferred.

The seats are of moulded wood fiber, exceptionally hard, and it is claimed that they are unaffected by moisture or acids, and will not split nor warp.

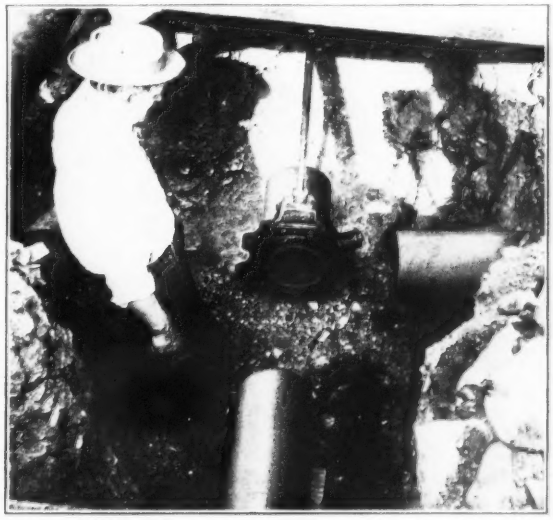
Special circulars are furnished by the manufacturers covering these combinations, and they will be sent to those interested who write, mentioning "Domestic Engineering."

AN EFFECTIVE VITRO BOOKLET.

"A Few Letters of Credit" is the title of a very neat and artistic booklet recently issued by Jas. M. Teahen, 171-191 Beecher Avenue, Detroit, Mich., manufacturer of Vitro "No Trouble" closet combinations. It contains letters from plumbers and jobbers who have been using these combinations for years. Among these is a letter from the plumber who bought the first Vitro Combination manufactured.

STRICKLER ADJUSTABLE PIPE CUTTERS.

W. W. Strickler & Bros., Columbus, Ohio, have recently put on the market an interesting innovation in pipe cutters, being of the adjustable ratchet type. They claim that the cutting of steel, wrought iron or cast iron pipe can be done with equal facility, and that the finished job is as clean as if done in a lathe.



The Strickler Adjustable Pipe Cutter on the Job.

The photograph shows ten and twelve-inch cast iron pipe in a ditch, the two cuts in the ten-inch made in eight minutes, and the twelve-inch cut in ten minutes.

The Strickler Adjustable Pipe Cutter.

These cutters are made in six sizes, each with a wide range of adjustment. A cut of the number one size is shown herewith. This is intended for small pipe in sizes one-quarter to two-inch.

Circulars and prices will be furnished by the manufacturers upon mention of "Domestic Engineering."

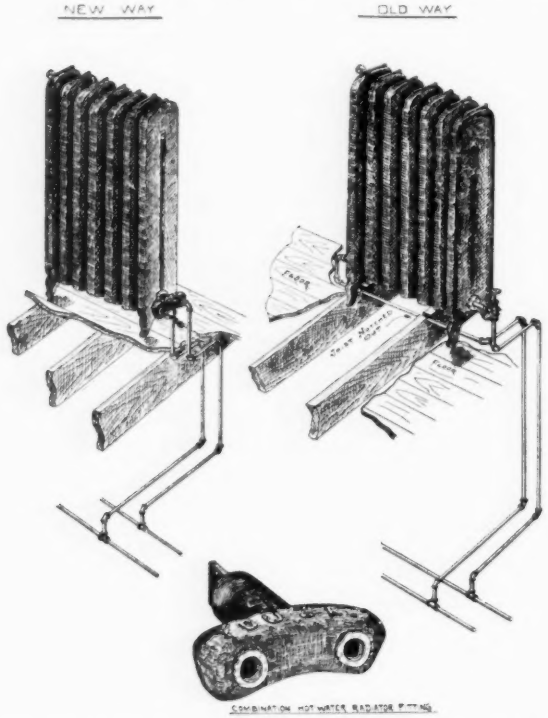
POCKET GUIDE FOR MASTER PLUMBERS.

Laib Co., of Louisville, Ky., has just issued a new edition of its "Confidential Pocket Guide for Master

Plumbers." This publication is issued for the convenience of this company's customers, and it is said to have found great favor with them. It is claimed that its use saves time, annoyance and money. The book consists of 60 pages, 4x7 in., and it can thus be carried in a pocket without trouble and always handy for reference. While this "guide" is distributed only among the company's customers, others interested can obtain a copy upon application, mentioning "Domestic Engineering."

THE YOUZA RADIATOR FITTING.

For hot water heating jobs a new fitting has been designed, which, it is claimed, reduces the labor necessary in setting radiators to the minimum. This combination fitting enables the workman to make connections with



COMBINATION HOT WATER RADIATOR FITTING

one end of the radiator instead of at both ends. It can be rotated to right or left to take up the difference in pipe lengths, without retarding the circulation. The supply and return can be connected to either side of fitting. It can be carried in stock, and represents but a small investment. The Youza Fitting Co., Dunkirk, N. Y., are the manufacturers and will send further particulars and prices on request. Mention "Domestic Engineering."

THE METAL MARKET

HEAVY BUYING BY THE RAILROADS.

Enormous orders continue to pour into the steel mills from all kinds of consumers, but the flood of orders from the railroads during the past week has astonished the trade. Nearly 1,300,000 tons of rails have been purchased for delivery in 1913 so far, and it is often well into the first quarter of the year before the railroads make any large purchases. In many years the greatest part of the business placed has been after April. With car orders there has been just as large a volume; so far this year, there have been purchased or built in the shops of the large companies over 350,000 freight cars. This exceeds any previous record. The mills of the United States Steel Corporation are turning out steel at the rate of more than 60,000 tons a day and all of the mills of the country combined are producing an average of 100,000 tons of steel products each working day; this is at the rate of more than 31,000,000 tons a year. In the line of merchant pipe the business in sight is fully as large, one inquiry is in the market for 70 miles of 8 inch pipe and there is another for 75 miles of 4 inch pipe.

The makers of cast iron pipe have not had as much business in the last fortnight as usual, but there are a number of inquiries in prospect. Pig iron markets have been active although most of the sales have been for small quantities. The greatest part of the iron needed for the first quarter of the year has been purchased and there are a number of furnaces that are unwilling to sell for second quarter delivery as they have disposed of enough of their product to keep their stacks running, and if there is a surplus they hope to secure a higher price. Most of the makers of heating supplies have covered their requirements for spring business, but have made no move yet to buy iron that will be used in the latter part of next year.

COPPER.

American consumers have purchased in small quantities but melters of copper in Europe are out of the market on account of the war scare. Prices are steady at 17.50 to 17.75 cents per pound for electrolytic.

LEAD.

The production of lead last year was the largest ever recorded and there seems to be no accumulation of stocks. Prices are firm at 5.10 cents New York.

OLD METALS.

Dealers' buying prices in New York are:

Light copper	$13.75 to	$14.00
Strictly crucible copper	15.50	15.87½
Uncrucibled heavy copper	14.75	15.12½
Uncrucibled copper wire	15.00	15.12½
No. 1 machine composition	12.50	12.87½
No. 1 brass turnings	9.00	9.12½
New brass clippings	10.75	11.12½
No. 1 composition turnings	11.25	11.50
Cocks and faucets	10.75	11.00
Clean red carboxes	11.75	11.87½
Light brass	7.50	7.75
Heavy yellow brass	9.00	9.25
Heavy lead	4.30	4.40
Tea lead	4.00	4.15
Scrap zinc	5.35	5.50
No. 1 pewter	33.00	34.00
No. 2 pewter	9.50	11.00
Close cut solder joints	9.50	9.75
Block tin pipe	43.00	44.00

St. Peter, Minn.—Contract for installing the plumbing and heating system in the new Union station at Waseca, Minn., has been awarded to Al. J. Potts & Co., of this city.

Among the Plumbing and Heating Contractors

NEWS FROM NEW ENGLAND.

Massachusetts.

Boston.—Mayor Fitzgerald has approved contracts with J. P. Dwyer & Co., for heating and ventilating, and Edward C. Kelley for plumbing, in the new Children's Hospital building. Bids on the work were as follows: Plumbing: P. J. Sullivan Co., $5,899; Pierce & Cox, $7,298; R. H. James Co., $7,954; Edward C. Kelley, $5,717. Heating and ventilating: Albert B. Franklin, $6,500; Ingalls & Kendricken, $6,685; J. J. Hurley & Co., $5,775; J. P. Dwyer & Co., $5,068; Pierce & Cox, $5,237; Power Heating and Ventilating Co., $5,249.

Lynn.—The board of health has sent a communication to the municipal commissioners urging upon them the advisability of establishing public comfort stations in different sections of the city and the matter is now under consideration. Under the state law enacted in 1911 cities are required to establish such stations except when the board of health deems them unnecessary. The locations proposed by the Lynn health board are, Central square, City Hall square and Market square. The designing of these stations will probably be put up to the building committee.

Holliston.—G. H. Winchester has the contract for installing a steam heating system in H. F. Fiske's house on Winthrop street.

Marlboro.—George R. Hall & Co. has the contract for doing plumbing at the home of John T. Burnett, Southboro.

New Bedford.—Abramson & Damon is the name of a new plumbing and heating concern now located at 42 Morton's court.

Leominster.—W. R. Jenna, engineer at the factory of the Howe Comb Co., has resigned to enter the plumbing business with his brother at Athol.

Rhode Island.

North Providence.—The school committee has awarded a contract for heating and ventilating the new Greystone school building to G. E. Haslam and the plumbing contract to M. F. Murphy.

Providence.—The awarding of the contract for the construction of the proposed new public comfort station, at Mathewson & Weybossett Streets, has been held up pending a decision of the city solicitor on the question of permit changes in bids. Flynn & Lough's bid for the work as received by the committee was $1,418 but a representative of the concern stated that it should read $14,018 and asked permission to make the change. The matter was put up to the law department.

Maine.

Bar Harbor.—Frank T. Young & Co. have incorporated their concern, which does a general plumbing business, as the Frank T. Young Company. Frank T. Young is president, John P. Carney treasurer, and Henry Hodgkins, secretary.

Connecticut.

Noank.—J. H. Webster, a local plumber, is the first local business man to make use of an auto truck for business purposes. Mr. Webster has purchased a two ton Knox truck and is finding it a valuable addition to his equipment.

Bridgeport.—John J. Scanlon has the contract for the plumbing in a brick business building which is being erected on Main street for Nathan Nussenbaum. The plumbing contract in connection with changes being made in a building at the corner of State Street and Colorado Avenue has been placed with Joseph Mongrain.

Waterbury.—Barlow Brothers Co. has the contract for plumbing and M. J. Daly & Sons Inc., for heating a building being erected on Wodlawn terrace for Paul D. Hamilton.

Milford.—The Theron Pond Co. has been incorporated to do a plumbing business. The concern has a capital stock of $4,000.

Milford.—Joseph E. Murray, of Main Street, has taken the contract to install new plumbing in the W. W. Scoville building on Morgan Street. Mr. Murray also has the contract for the installation of a heating plant in the residence of E. E. Ryan on Edgewood Street.

NEWS FROM PHILADELPHIA AND VICINITY.

Brown & Doran, 2628 N. Front Street, Philadelphia, have the heating and plumbing contract for the residence of F. Smith, Noble, Pa.

Wesley S. Smith & Co., 1830 W. Susquehanna Avenue, Philadelphia, have been awarded the heating contract for 30 new houses in Roxborough, Pa.

J. I. Jarvis, 4127 Germantown Avenue, Philadelphia, Pa., has just moved into his new quarters at above address where he has opened a well appointed show room. Mr. Jarvis reports a lot of heating and plumbing contracts on hand.

Gray & Dorner, 1727 Columbia Avenue, Philadelphia, have been awarded the contract for plumbing the new seven-story building for S. L. Allen & Co., Fifth and Venango Streets, Philadelphia.

Edw. Tyson, Wyncote, Pa., is making extensive alterations in the Abington High School and also has the plumbing and heating contracts for a large residence in Noble, Pa.

Maxwell & Reichman, 241 W. King Street, Lancaster, Pa., have been awarded the heating and plumbing contract for two large residences in Millersville, Pa., for J. Brenneman.

Mussellman & Schwartz, Lancaster, Pa., successors to John L. Arnold, report that they have plenty of work on hand and have just been awarded the heating contract for the Catholic church in Lancaster, Pa.

NEWS FROM BALTIMORE, MD.

John Kirkley has removed his plumbing stock and tools from the building at the corner of Pennsylvania and North Avenues to the new building at 2325 Pennsylvania Avenue.

The many friends of E. J. Burke, Jr., will be glad to hear that he has recovered from a long illness of typhoid fever which for a time was very serious.

Thomas A. Swann has opened a new plumbing shop at 1322 Pennsylvania Avenue.

Russell F. Dressel has removed his plumbing business to the corner of Clay and Liberty Streets.

James McCart, the successor of Henry Boss, and for years located at 1104 E. Monument Street, has formed a partnership with James McLaughlin, and they have opened a plumbing establishment at 851 Greenmount Avenue. They will carry on a general plumbing and heating business.

NEWS FROM CINCINNATI, OHIO.

Cincinnati, like other wide-awake and first-class cities, has its anti-public drinking cup ordinance and that it is being rigidly enforced is proven through the first arrest on October 21st when Oscar Blockman, proprietor of a restaurant on John Street, was haled into court for allowing the use of a public cup in his place of business after repeated warnings to discontinue this practice. Dr. Landis, our efficient health officer, who labored hard to bring about this ordinance, is to be congratulated on its enforcement and we hope he will be properly supported in all future violations.

William Wanner has recovered from his recent operation which took place at Dr. Eckman's Hospital several weeks ago. We hope "King Bill" will rapidly gain strength and be himself again in the near future.

The Attlesey-Dyer Co. is well booked, having contracts for the largest work in the city. This company is hustling the work on the Union Central Life Insurance Building at Fourth and Vine Streets. When this building is completed it will be the highest in the city, being thirty-four stories in height. This company also secured the con-

tract for plumbing in the St. Elizabeth Hospital. With a large number of smaller contracts this company is also plumbing two sky-scrapers in Louisville, Ky., all of which keeps Mr. Dyer pretty busy.

Another large contract has been landed by a local concern, the Wm. Hillenbrand Co., which will do the plumbing in the new Gibson House on Walnut Street. This contract is second only to the Cincinnati Hospital contract with regard to the number of fixtures to be installed, numbering about eighteen hundred, and as the make of fixtures has not been decided on to date it is interesting work among manufacturers and jobbers to see who will be favored with the business. The Wm. Hillenbrand Co., reports several other large contracts on hand, viz: The Metropole Hotel on Sixth & Walnut Streets, which has a modern Turkish bath and plunge equipment; the Harrison Hotel on Seventh and Mount Streets, the Bethesda Hospital, and have just been awarded the contract for plumbing in the American Theatre being built on Walnut Street, near Sixth Street. Its success in landing so many profitable contracts is no doubt in a large measure due to the untiring efforts and popularity of Ray Hillenbrand.

There seems to be no end to big things in Cincinnati and it looks as if it will continue for some time. One of the really important operations to be brought out in the near future will be the Hamilton County Court House and Jail to be built at Court and Main Streets and running through the entire square to Sycamore Street, taking in the property now occupied by the Crane-Hawley Co., who are at present building on Broadway and Ninth. There is also a possibility of putting through the project to take down the Johnston Building at Fifth and Walnut Streets, and build in its place a twenty-two story office building. The taking of bids on the Fourth Intermediate School has been delayed till the first of next year. So with these as well as other equally important operations in sight it augurs well for a continuation of busy days.

A BUSY CLEVELAND PLUMBER.

L. E. Thomas, 5713 Woodland Avenue, Cleveland, O., whose picture is reproduced herewith, states that this is one of the best business years he has seen during the

L. E. Thomas, of Cleveland, O.

thirty-five years he has been in the plumbing and heating business. He has plenty of work on hand, amounting in all to over $15,000.

NEWS FROM ILLINOIS.

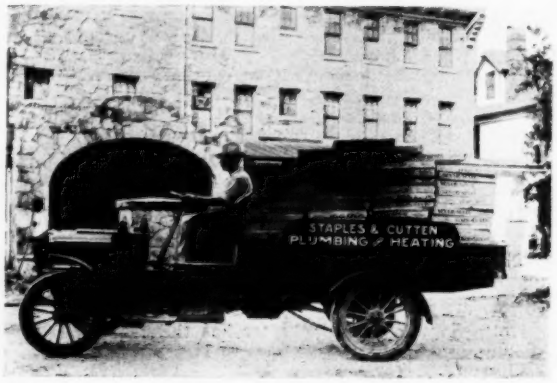
Champaign.—W. R. Wozencraft has taken in F. A. Finder as a partner in his plumbing business. Mr. Wozencraft came to Champaign from Pittsburgh three years ago and has been very successful. Mr. Finder is well known here as he has been a member of the Board of Examiners of this city.

Urbana.—O. L. Kern, 215 S. Market Street, is making a partnership arrangement with Forest Gossett, formerly with E. A. Robinson, of Champaign. Mr. Kern reports plenty of work to keep him busy for some time to come.

Urbana.—L. W. Apperson, 217 W. Monroe Street, has bought out his former partner, Mr. Wooten, and is now in business for himself. Mr. Apperson is a live and progressive young man in the trade and doing lots of work.

PLUMBERS USING AUTO DELIVERY.

Among the progressive southern plumbers must be mentioned the firm of Staples & Cutten, of Daytona, Florida. They use an automobile delivery daily in their work. They believe in twentieth century methods.



Staples & Cutten's Delivery Wagon.

The illustration shows another one of their beliefs, that in the "Never-Split" seat, a shipment of which they are conveying from the freight station to one of the new Daytona Beach hotels, for which they have the contract.

NEWS FROM OHIO.

Ashtabula.—E. M. Burroughs, 5 East Fisk Street, reports plenty of work on hand. Among the present contracts on his books are: Installing heating systems in the Kriz block, in the Sibley Street school and in the Dorset Street high schools.

Painesville.—S. M. Hawkins, of this city, has secured the plumbing contract in the A. D. Baldwin residence at Little Mount, O., and he has on hand plumbing and heating contracts in several residences here.

Youngstown.—The W. J. School Co. has been awarded the heating contract in the Youngstown city hospital, consideration, $14,000, also the plumbing and heating contract in the Thiel college at Greenville, O. This company has a number of other unfinished contracts on hand which will keep their force busy until late in the season.

Youngstown.—The plumbing and heating contract for the Mennonite gospel mission in this city has been awarded to T. G. Beede, 1324 W. Hillman Avenue.

Cleveland.—Fred Weiss, formerly partner in the Carey, Scott, Weiss Co., 2033 Prospect Avenue, has recently purchased the interests of Carey and Scott and now has complete ownership of this plumbing and heating concern. Mr. Weiss has been in the business for a good many years and reports some very good contracts on his books at the present time.

Cleveland.—Barnes & Rainger, 10614 Superior Avenue, who have recently embarked in the plumbing business, have some nice contracts in hand, among them being the plumbing in Judge Vickery's Lake Avenue residence, $1,700; in the residence of Mr. During, Euclid Heights, $600, and for Mr. Nardi of Murry Hill, $1,300. Mr. Rainger served as chief plumbing inspector of Cleveland for several years, and Mr. Barnes was one of his assistants.

Cleveland.—Warden & Leese, 1905 Prospect Avenue, have recently secured several large contracts for plumbing, among them being the plumbing for the Cleveland Hardware Co. for $5,000, and in the factory for S. Korach & Co., amounting to $5,000.

ARE BUSY ON LARGE AND INTERESTING CONTRACT.

The Moyer Plumbing and Heating Co., with offices at 224 Oak Street, Cincinnati, Ohio, are installing the plumbing and heating in the Ohio Hotel, at Bordman and Hazel Streets, Youngstown, Ohio. The plumbing consists of 172 bath tubs, 235 lavatories, 202 water closets, 8 slop sinks, 9 showers in help's quarters, and 11 solid porcelain urinals. There is about 100,000 feet of piping and 1,500 feet of sweeper piping. All closets are equipped with flush valves, trimmings throughout are nickel plated. The hot water piping is brass and the cold water, galvanized iron.

The heating is a direct two-pipe vacuum system, using 400 radiators for 1,400 feet of radiation. A fan ventilator system is used throughout the building. The hotel will be opened early in the spring.

The Moyer Company has recently secured the contract for the plumbing in a new eight-story hotel at Louisville, Ky. A new ten-story hotel at Chattanooga, Tenn., is also among their new contracts, and is handled on a percentage basis.

AN ATTRACTIVE PLUMBING AND HEATING ESTABLISHMENT.

One of the attractive show windows of Cleveland's many progressive plumbing shops is that of the Cleveland Sanitary Plumbing and Heating Co., located at 1022 East 105th Street. The reproduction of this window

Cleveland Sanitary Plumbing & Heating Co's. Attractive Show Window.

herewith does not do justice to its attractive design. The display of fixtures should interest the most critical, and the invitation on the display card in the center, "Doesn't

Earle A. Foster, of Cleveland, O.

this display urge you to come in?" should get them inside.

This company now has on hand an unusual number of contracts, among them being the St. John the Baptist Greek Catholic Church, a twelve apartment building, a business block containing four stores and six apartments, and one hotel job, all in Cleveland. Three residences at Euclid Heights and four at Lakewood, Ohio, are among out of town jobs they have.

Mr. Earle A. Foster, the manager, states that they hope to secure the Pennsylvania Railroad passenger sta-

A Handsome Corner in Cleveland Sanitary Plumbing & Heating Co's. Establishment.

tion at Ft. Wayne, Ind., which they recently figured, and that they are now figuring an average of four jobs a day. They keep three men going constantly on repair work and overhauling, and are more than pleased with the prospects for business in the future.

NEWS FROM PITTSBURGH AND VICINITY.

A. A. Hasson, of No. 17 Mifflin avenue, Wilkinsburg, Pa., has taken the contract for the construction of four large apartment houses which will be erected in the South Highland district, Pittsburgh. The specifications which have just been announced, include hot water heating, plumbing for 32 bath rooms with equipment and ventilating. The contract is to be done at a probable cost of $100,000.

The Pittsburgh Railways Co., has started the erection of a heater building at a cost of $5,000 and the contract for the plumbing has been awarded to Moss & Blakely. The heating contract has been awarded to the Reliance Heating Co., of Pittsburgh.

Plumbing in the new Union Gospel church at Wilkinsburg, Pa., will be done by T. M. Allen, of Wilkinsburg.

Pittsburgh Master Plumbers were looking forward to the erection of the large Municipal Market House on the Duquesne Wharf this fall, which overlooks the Allegheny River, but the Phipps Estate went into court last Monday and asked for an injunction against the city, restraining the erection of the improvement. P. J. Brennan, of the Pittsburgh Public Safety Building has the plans ready. The owners of the Fulton Building assert that the new market house would shut out light, notwithstanding the fact that the improvement would be only one story in height. A complete heating and ventilating system is specified.

Heating appliances is to be made a feature of the new business that has just been started by E. S. Corlett, of this city, formerly connected with the Pennsylvania Hardware Co. The new firm will be known as the E. S. Corlett Hardware Co.

Architect Charles M. Rieger, of the Germania Bank Building, Pittsburgh, has plans out for a new school to be built by the Board of Education at New Kensington, Pa. The plans include a complete heating system, plumbing, damp-proofing and a vacuum cleaning system. The building will cost between $75,000 and $100,000.

News has reached the trade here from Titusville, Pa., that the Radiator Co's. plant there is too small to care for immediate business, and that many enlargements and improvements are being considered. Plans for a new

building have been prepared. One of the new buildings will occupy a site 218 by 68 feet and another building will measure 98 by 68 feet. The business of this company is increasing rapidly, and the additional manufacturing space is a necessity.

One of the best contracts that is about to be let in the Pittsburgh district during the next few weeks will be that of the Republic Bank Note Co., which will be an eight-story fireproof building, 106 by 103 feet. The plumbing, heating and general sanitation of this new building is being given especial consideration by the company.

NEWS FROM KENTUCKY.

Louisville.—The beginning of November finds the plumbing and steam-fitting trade in Louisville and other parts of Kentucky so busy that each day is barely long enough to get out the required volume of work. The accumulations of a $7,000,000 building year—the fiscal term which closed August 31, 1912,—is piled up on the allied trades. There is a tremendous volume of work to be done which is the result of a long summer of booming building. Many structures which were begun last spring or late last winter are now being fitted for occupancy. They have been equipped with plumbing and steam fitting. The bigger jobs which are now being handled are those of this type, upon which work was originally begun by structural engineers and brick-layers several months ago. It is notable that no perceptible decrease in activity of business becomes evident as cold weather approaches. If anything, the new work which is in hand is moving more briskly than ever, for the builders are counting upon a rushing finish in many jobs before Old Boreas appears permanently. Lots of new work is developing, partly because of the naturally stimulating effect of a big building year, and partly because of the prospect for mild weather some time hence. Thus, it is apparent that the approach of winter is not having a detrimental effect upon new work. And cold weather naturally stimulates repair business, and puts the services of a plumber at a premium.

It is very interesting to note the effect which the recent enactment of two state laws has had upon the plumbing trade in Kentucky. At the General Assembly of 1912, last January, measures were passed eliminating the germ-laden public drinking-cup in the Bluegrass commonwealth, and also providing for better conditions for women wage-earners of the state. The two laws, having passed the ninety-day limit after the time of their passage, went into effect a short time ago, and their effect in plumbing circles has been marked. The law abolishing the public drinking cup in office buildings, schools, churches, railway trains and everywhere else in Kentucky, has opened a lot of business in drinking fountains. Every public school building in the city has been equipped with a number of founts of the jet type, and office buildings, as well as street fountains, are similarly equipped with the modern fixture. The female labor law has demanded of many employers more sanitary accommodations and greater privacy for the needs of their women employees. A number of Kentucky factories have been ordered equipped with additional lavatories, wash-rooms and toilets. More work along this line is to be expected. Accordingly, the plumbing trade has every reason to believe that increased business from these two new sources alone will result.

The Louisville Master Plumbers' Association is resuming work after having spent a summer in comparative inactivity, chiefly because of oppressively warm weather. The Gateway City organization is one of the liveliest of its sort in the entire trade. A meeting is to be called at once for a conference with representatives of the jobbing houses of the city. These conferences, bearing upon matters of importance in the allied crafts, are frequently called, and it is stated that one should be held immediately because of the press of business, making it imperative that the trade work without a hitch. The officers of the Louisville association are as follows:—President, F. S. Schardein; vice-president, Leo P. Spies; secretary, J. E. Gray; treasurer, G. Phil Miller; directors, David Welsh, J. R. Watts, Jr., Jacob Isaacs, John Fleck, William J. Brady, Henry Bonkofsky, Henry E. Otto and William Herrmann.

Fred A. Clegg & Co., one of the best-known steam-fitting concerns in Louisville, have contracted to handle the iron conduit work upon the new $300,000 home of the Young Men's Christian Association at Third avenue and Broadway in Louisville. This contract includes conduit wiring for several thousand lamps in the structure and the motor installation for the home's elevators and ventilating fans.

M. J. Duffy & Sons, of Louisville, recently closed a contract to install the plumbing in the Y. M. C. A. home at Third avenue and Broadway. This work will be unusually interesting, inasmuch as the institution is to have one of the finest sets of shower baths in the country, as well as a large swimming-pool and dormitory lavatories. This firm has been unusually successful in landing high-class contracts during the past couple of weeks. It will install the plumbing in the annex to the Preston Hotel, a 100-room addition now in course of erection, each room to have a private bath. It has the contract for the depot of the Louisville & Nashville Railroad Co., at Broyles, Ala., and has finished work upon six bath-rooms in the new Rectory of the Roman Catholic Cathedral of the Assumption. The same firm will also install a complete toilet and lavatory outfit in the big warehouses of the American Tobacco Co., at Eighteenth Street and Broadway, in this city, and has half a dozen important residence jobs, each of the dwellings demanding from four to eight bath-rooms, such as those now being erected for W. B. Belknap, Alfred Brandeis, S. C. Hennings, Lafon Allen and Grant Mason in the eastern suburbs of Louisville.

That the Louisville plumbing trade is ably represented in the athletic world is evidenced in the persons of William M. Duffy and Albert Clegg, both young men who have achieved fame in their respective spheres. Mr. Duffy, who is one of the finest athletes ever turned out in Kentucky and who, after several years as a star on the Central University football eleven, is now head football coach of the Male High School in Louisville for 1912. He is the son of M. J. Duffy, president of M. J. Duffy & Sons. Young Clegg, who occupied first base for the St. Charles Barromeo Catholic Church team, amateur champions of Louisville during the past summer, is the son of Fred A. Clegg, president of F. A. Clegg & Co.

Architects for Fred A. Bauer, building a handsome apartment house at Bradstown Road and Glen Mary Avenue in this city, recently awarded to John B. Stickler & Son, of Louisville, the contract for fitting four bath-rooms and two laundries in the building. John B. Stickler, president of the firm, is a former president of the Louisville Master Plumbers' Association.

Contracts were recently closed by Jacob Isaacs, of Louisville, for the installation of plumbing in two big structures in the down-town district. The plumbing in the office building of the Great Southern Fire Insurance Co., an eleven-story structure at Fifth Avenue and Walnut Street, is to be installed by Mr. Isaacs, who will also do the work on the new bachelor apartments owned by I. P. Barnard. The former is a job demanding about five hundred fixtures, while the latter runs to nearly one hundred.

A. J. Anderson, president of A. J. Anderson & Co., heating contractors in Louisville, has been elected a member of the Rotary Club. The honor conferred up Mr. Anderson in this election is a signal one, inasmuch as but one man in each of many lines of business is accepted for Rotary Club membership in any city.

Benjamin Watts, Louisville, recently secured contracts for the plumbing in a large grocery store that is to be occupied by Samuel Plamp, at Twenty-ninth and Bank Streets and for the new building of the Mengel Box Co. at Eleventh and Kentucky Streets. The two jobs involve several thousand dollars.

Branching out from his original headquarters in Barbourville, Ky., W. W. Sawyers has opened another office for his firm in Corbin, Ky. Mr. Sawyer is one of the best-known plumbers in Southern Kentucky.

The Court of Appeals, at Frankfort, Ky., has held that the installation of a steam boiler in a residence constitutes an improvement, giving the firm that does the work a mechanic's lien on the house until the work is paid for. This decision was the result of an appeal taken in the case of a radiator company versus Frank Menne, of Louis-

ville. The defendant employed a contractor to install a boiler in his residence, and subsequently paid the contractor, who, in turn, failed to pay the radiator company. The latter company filed a lien on the dwelling and, although the lien was contested, it has been upheld by the Appellate Court.

NEWS FROM ST. LOUIS, MO.

Among the recent contracts for plumbing and heating work of any note in St. Louis, the largest was acquired by the Wm. Burke Plumbing Co., 1914 Olive Street, consisting of the heating systems to be installed in the tremendous plant of the Fulton Iron Works at Wabash tracks and Plymouth Avenue, which comprises 12 large buildings covering an area of about 10 acres. The Burke Co. is also installing the plumbing and heating work in the new Fire Department house No. 50, at 223 S. Newstead Avenue. The plumbing work on the six-story warehouse being erected by the Ralston Purina Mills at Eighth and Gratiot Streets, was also let to the Burke Co.

The Thos. Sheehan Plumbing Co. is installing the plumbing in the plant being erected for the Busch-Selzer-Diesel Engine Works, the plant covering about 10 city blocks at 2nd, Cherokee and Utah Streets.

The plumbing contracts for the two largest jobs ever attempted in St. Louis, being the Railway Exchange building at Sixth, Seventh, Olive and Locust Streets, a structure of 22 stories; and the 20-story building being erected on the corner of Broadway and Olive, have not been let.

The Abel & Gerhard Co., one of the oldest plumbing establishments in St. Louis, has contracts for plumbing work in several fine residences in St. Louis.

The new American hotel annex plumbing work is being done by C. O. Smith Plumbing Co.

Gloeckner & Melville, are installing a heating system at Vandeventer and Olive, in an office building of six stories, which will be occupied entirely by the medical profession.

William P. Morschel, who has devoted about ten years to the real estate business in St. Louis, has entered into the plumbers' specialty line as sales agent for the Blake Specialty Co., of Rock Island, Ill. He is looking after the Blake Co.'s business in St. Louis, and has an office and store room at 4026 Shenandoah Avenue, where he claims he is "delivering the goods."

NEWS FROM WISCONSIN.

Sheboygan Falls.—This village may soon be equipped with a water works and sewerage system. A committee of citizens has been appointed to investigate the matter and report on the advisability of installing these systems. It is expected that nothing definite will be done before spring.

Janesville.—George G. Sutherland has taken up the central heating project in this city, which was abandoned by the Janesville Electric Co., this spring. The contract for installing a vacuum steam heating system in the basement of Howard's dry goods store in the Sutherland building has been awarded to McVicar Bros. Two boilers capable of carrying 16,000 square feet of radiation, will be installed together with an electric pump which is to maintain a vacuum of seven inches to make a pressure of two ounces to the square inch in the radiators sufficient. The work of adapting the radiators and piping for the use of steam is well under way. The plant will supply buildings on the south side of the Milwaukee Street bridge which were formerly supplied by the central hot water heating system of the Electric company.

Two Rivers.—A new building is being erected for Charles Sibenborn on Adams street, which is to be used as an up-to-date plumbing and heating establishment. The front of the lower floor will be fitted up purposely to make a splendid showroom and a large, well equipped workshop will be fitted up in the rear.

Racine.—The Thomas Heating Co., which has been successful in carrying off many large contracts in the state as well as in this city, has just been awarded a large heating contract in Springfield, O. Mr. Thomas has just returned from that city where he closed the contract for installing heating systems in the factory buildings of the International Harvester Co., located in Springfield. The amount of the contract is about $15,000.

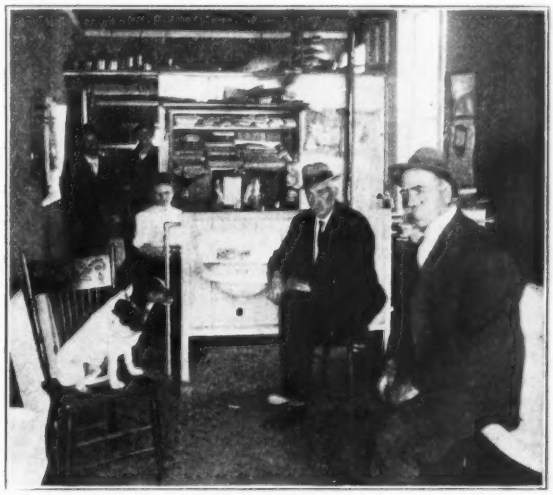
Sheboygan.—The Sheboygan Plumbing Co. has been incorporated with a capital stock of $5,000. The incorporators are: J. J. Ramadker, Gotlieb Merz and Frank Guenther.

Grand Rapids.—The Chicago, Milwaukee & St. Paul railroad is erecting a new passenger station in this city. Contracts for both the plumbing and heating work were awarded to local tradesmen. The Nash Hardware Co. has the contract for installing a modern heating system and work has been started on same. The plumbing contract was awarded to the Grand Rapids Plumbing Co.

Milwaukee.—The F. A. Goll Co., 682 Lincoln Avenue, has been awarded a contract by the department of public works for doing the plumbing and sewerage work in connection with erecting a dining room and two wing addition to the Blue Mound Sanatorium on the Blue Mound road, at Wauwatosa. The contract price amounts to $1,072. The same concern was recently awarded a plumbing contract by the school board for the plumbing necessary in doing the concrete work of the new Riverside High school.

A PASADENA PLUMBING ESTABLISHMENT.

Out at Pasadena, California, in the land of generous sunshine and orange groves, there is a plumbing shop owned by Mr. Geo. T. Downing. The picture shows Mr. Downing, and on a chair in the foreground is his dog,



Geo. T. Downing's Plumbing Establishment at Pasadena, Cal.

Flush. A study of the principles and uses of plumbing goods has engaged the attention of Flush for some years. His knowledge is now such that if he could talk he would be on the payroll as a star salesman.

NEWS FROM ST. PAUL.

B. L. Goodkind, of Mannheimer Bros., has let the plumbing contracts in two cottages on Linwood Place to Thos. Davis & Sons, 155 West Third Street. Mr. Goodkind is planning on building six more cottages which he will have foundations in for before it freezes up. Thos. Davis & Sons are also installing the plumbing in the Brenberg residence at No. 549 Dayton Avenue.

Hankee & Eha, 107 East Fourth Street, are doing the steam heating and boiler work in the New St. Paul Seminary building, and are installing a hot water heating plant for W. F. Haney at No. 188 West Winnifred Street.

J. D. Hyland, 198 West Third Street, was low bidder on a hot water heating plant in the residence of B. Turtell, 639 Dayton Avenue. Mr. Hyland has completed the plumbing and hot water heating in a residence on Cherokee Avenue for Wm. F. Pfeiffer of the Yoerg Brewing Co.

J. P. Adamson & Co., No. 1920 W. University Avenue, were awarded the contract for installing drinking fountains in the "Hill" School. They are also installing the plumbing in Willard Hall at the State University, the plumbing in the Hunt flat building on St. Peter Street and the plumbing and heating in the new high school at Sauk Rapids, Minn.

J. E. Holt Plumbing Co., 171 East Sixth Street, is installing a hot water heating plant for L. Larson at 1920 W. Minnehaha Street.

The Healy Plumbing & Heating Co. is doing the plumbing and heating work in Howard Johnston's residence.

Geo. Kleinschmidt, 1097 West Seventh Street, has several heating contracts on hand to complete before cold weather arrives. He is installing hot water plants for Joseph Seichs on Randolph Street, Jas. Peters on James Street and Jos. Skanda on Victoria and Schaffer Streets. B. O. Frazer is installing the plumbing in Jos. Skanda's residence.

D. Grossman has let the hot water heating in his four flat building to Frank McTigue and the plumbing to Edw. Snyker. Mr. Snyker is also doing the plumbing work in the residence at 814 Holly Avenue for Miss E. Eckert.

W. F. Miller, 484 Mississippi Street, was awarded the contract for a hot water heating plant in G. E. Snyder's residence at 1043 Cromwell Avenue.

Louis F. Nienaber, 283 East Seventh Street was awarded the plumbing contract in a residence for Fred Romer of the Romer Construction Co. He has also installed a new bath room for F. B. Thompson of the N. W. Electric Construction Co.

Fred Fredrickson, 900 Rice Street, has just completed the plumbing in the new residence on Como Boulevard for Mike Gibbons. Theo. Niles, 903 Rice Street put in the hot water heating plant.

Wm. Jernegan, 1245 Van Buren Street, is installing a hot water heating plant for Gust. Anderson on Hague Avenue.

Hartford & Jacobson, architects, have rejected the plumbing bids on Mrs. Sarah Young's residence, the bids running higher than their estimates. New specifications will be out in a few days.

NEWS FROM THE PACIFIC COAST.

San Francisco.

Major General Leonard Wood, who is now in San Francisco, has just announced that this city is to be made a brigade post and the headquarters of the United States Army west of the Rocky Mountains, and that in the near future $4,000,000 will be expended here by the government for new army barracks, docks and other structures. As the amount of plumbing work necessary to modern barracks is considerable, this announcement comes as especially good news to the plumbing trade. But aside from the money to be spent by the government in this connection, the additional number of soldiers, and others who will come to the city will be no small benefit to business generally. Conditions here are still improving and it looks as though building will be unusually active for the winter season. Last week actual work was started on the Service Building for the World's Fair and this event was celebrated by a parade of the contractors, and trucks loaded with materials, through the business district. The Service Building will cover an area of 150 by 170 feet and will be three stories in height. The various technical and administrative departments, as well as the fire and police department, and engineering hospital will be in this building. The second floor of the south wing will be devoted to the engineering, mechanical, electrical and civil engineering departments.

As yet the local wholesalers have not taken any concerted action on the matter of presenting their claims before the Interstate Commerce Commission which is to reconsider the freight rate tariffs on the first of next year, but it is probable that they will have a special representative at the investigation, and not depend wholly upon the efforts of the traffic bureau of the San Francisco Chamber of Commerce, which has many diversified interests to look out for.

The ball and reception of the local Master Plumbers' Association, to celebrate the opening of the new association building at Page and Gough Streets, was duly held on Saturday night, Oct. 19th, and the event was successful in every respect. A large representative body of master plumbers, jobbers and special representatives of manufacturers was present together with their families and friends. Special music was rendered by Miss Guthrie, a talented violinist, and the dancing was continued until a late hour. Frank Klimm, past president of the association, and Frank Lyman were on the floor committee. From the visitors in attendance the association received many compliments about the handsome building, which is one of the finest of its kind in the country. The main hall where the dance was held is 36 by 72 feet in size, and the whole building covers a plot 60 by 107 feet. It is three stories in height and has an exterior of cream-colored brick. The banquet hall and kitchen are in the basement, and the two upper floors are devoted to private apartments for renting out. The building and furnishings alone cost about $50,000.

The Western Heat Regulation Co. has just completed a contract for installing heat regulation systems in some new silk mills in Japan.

H. L. Allison, special representative on the Coast for the Standard Sanitary Manufacturing Co., has returned from a business trip in Los Angeles.

Frank Wassmann, of Benicia, Cal., is making arrangements for opening a plumbing establishment in the Hoyt Building of his city.

James D. Sturton has purchased the plumbing and heating business which has hitherto been conducted by T. P. Lund, at Pasco, Wash.

RESIGNATION OF ST. LOUIS SUPERVISOR OF PLUMBING.

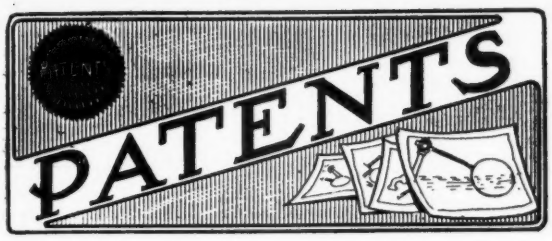
Stephen H. Gilmore, supervisor of plumbing for the City of St. Louis, Mo., has resigned that position to accept one as plumbing inspector. During his term of office he was instrumental in saving a great amount of money for the city by having his department do the plumbing work on the many new public buildings, comfort-stations, and bath-houses erected by the city, which heretofore had been let to contractors. In naming a successor to Mr. Gilmore, the city had to exert itself to get a man who could ably direct the work of such an important office, which requires a man with years of a practical and technical knowledge of the plumbing business, and in naming Charles F. Walther, as Mr. Gilmore's successor, it is believed the city has acquired the services of a man who can ably direct the workings of such office. Mr. Walther has followed the plumbing trade in St. Louis for the past 29 years.

WASHINGTON PLUMBING INSPECTORS' FOURTH ANNUAL RECEPTION.

The Association of Plumbing Inspectors of the District of Columbia is arranging for its fourth annual social session to be held some time during the month of December next, at a place to be selected later on. While nothing definite has as yet been given out by the committee on arrangements, it is expected that this year's affair will by far excel the enjoyable ones which have gone before, and this can be partly expected by reading the personnel of the committees: On arrangements: Chairman J. F. Brady, M. J. Fennell, M. J. O'Callaghan, Geo. A. Crawford, Wm. A. Sparrow, Wm. B. Wall, Wm. H. Marsh and Frank Wall. On talent: Chairman, Jos. D. Moriarty, Samuel Tapp and Frank Lockhead; and on place and date: Chairman, A. R. McGonegal, Richard O'Brien and J. F. Brady.

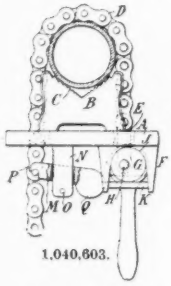
SOUTHERN NOTES.

With the erection of a twelve-story hotel in Wheeling, W. Va., on the site now occupied by the Hotel Windsor, during the next few months, a good heating and plumbing contract is about to be let. There will be 207 guest rooms in this new house, which will cost in the neighborhood of $350,000. The house is to be completed by September 1, 1913. Modern hotel bath rooms are to be installed.



Heating Department.

1,040,603. Chain Pipe-Vise or the Like. George Amborn, Chapinville, Conn., assignor to J. H. Williams & Co., Brooklyn, N. Y., a corporation of New York. A chain pipe vise including in combination a jaw adapted to engage the under side of the pipe and to support the same, a chain having one end adapted to be held fast at one side of the pipe and the other end free and adapted to be passed over the pipe and locked at the other side thereof at determined intervals in the length of the chain, so as to embrace pipes of different diameters, locking means for said free end of the chain, means in engagement with said locking means for quickly taking up the slack of said chain after said free end is locked, and additional means for finally slowly tightening the chain.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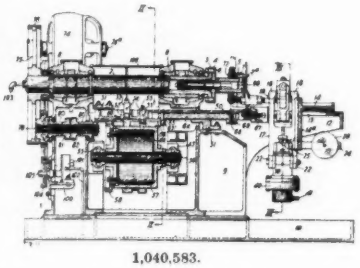
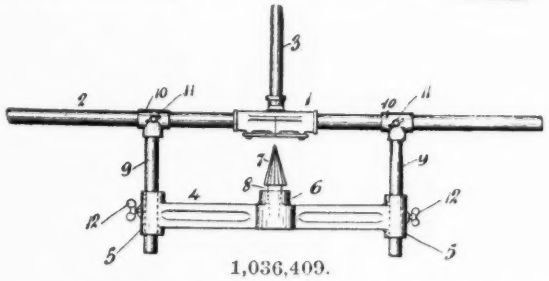

1,040,583.

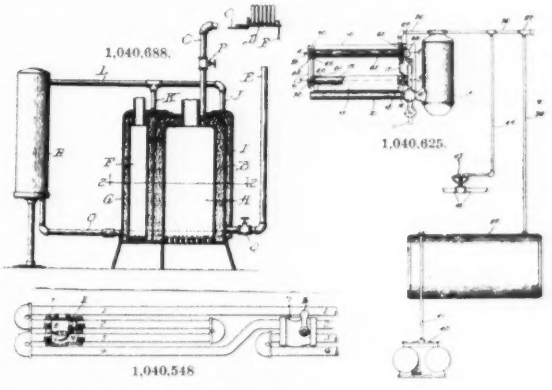
1,040,583. Thread-Cutting Machine. Augustu M. Saunders and Oliver M. Mowat, McKeesport, Pa., assignors to National Tube Company, Pittsburgh, Pa., a corporation of New Jersey. A thread-cutting machine comprising a rotary thread-cutting die, means for driving said die, gripping mechanism having jaws for holding the articles during the thread-cutting operations, a lever forming a stop arranged to move into and out of the path of movement of the articles being threaded to determine the length of thread cut upon the articles threaded, and means operatively connecting the gripping mechanism with said lever by which said lever is moved into and out of operative position, said die driving means while in operation being arranged to mechanically actuate the die, gripping mechanism and lever in pre-arranged sequence.


1,036,409.

1,036,409. Pipe Threading and Reaming Device. Charles A. Anderson, Newport, Ky.

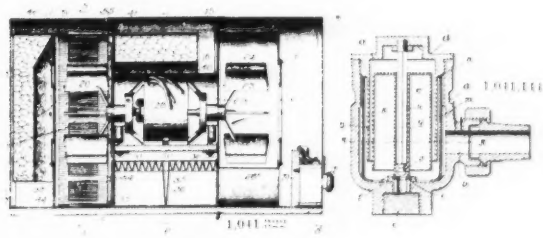
1,040,688. Heater. William H. Jones, Chicago, Ill. Heating apparatus comprising a combustion chamber, a water-heating chamber arranged to be heated by said combustion chamber, a second combustion chamber, a second water-heating chamber arranged in effective heat-conductive relation to produce secondary heating effect with said first mentioned water-heating chamber and arranged to be independnfly heated by said second combustion chamber, and independent circulating systems and connections in communication respectively with said two water-heating chambers.

1,040,548. Heating System. William H. Jones, Chicago, Ill. The combination with a circulating system and the heating pipes 2 and 3 communicating therewith, of a valve mechanism for cutting said heating pipes out of service comprising a casing having through passages communicating with both of said pipes and said system, and a port forming a communication between said passages, and a double seating valve normally closing said port to cause circulation through said pipes 2 and 3 but arranged to close the outlet end of the passage communicating with pipe 2 and simultaneously open such port, said casing having a depending flange 19 arranged below said port and pointing in the direction of the flow of the heating fluid.



1,040,625. Thermostatic Regulating Device. Edward W. Comfort, Chicago, Ill. A regulating device of the nature described comprising a thermostatic element, a closure operated thereby in one direction by the expansion of said element, a pressure escape outlet member co-operating with said closure, and a second thermostatic element in operative relation to said outlet member to positively move said member in two directions respectively under expansion and contraction.

1,041,322. Heating and Ventilating Apparatus. Frank P. Mies, Chicago, Ill., assignor to The Plural System Ventilator Co. In an apparatus of the character described, a casing divided into three chambers, a central and two side chambers, a casing for a motor in the central chamber, and a casing for a fan in each of the side chambers, a motor in the motor casing, and a fan in each of the fan casings, said fans secured to opposite ends of the motor shaft, said fan casings each having an inlet and an outlet, an electric heating device in one of said fan casings, a temperature responsive device in the air path of the fan containing the heating device, and a switch controlled by said responsive device for varying the heating effect of said heating device.



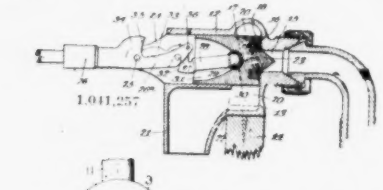
1,041,144. Water and Air Relief Valve for Steam-Heating Systems. William W. Morgan, Philadelphia, Pa., and James L. Fitts, Merchantville, N. J., assignors to Warren Webster & Co., a corporation of New Jersey. In a water and air relief valve for steam heating systems, the combination of a body having an inlet and an outlet, a motor within said body controlling said outlet and provided with a tube, the lower end of which constitutes the valve piece, and a stationary head having a sharp edge closely fitting the lower end of the tube when the tube is lowered and

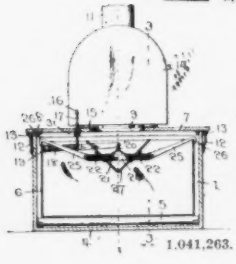
acting to arrest foreign matter entering the tube, said head being located below the level assumed by the bottom of the tube when the tube is raised by the motor, so that the arrested matter on said head will be discharged when the tube is raised.

Plumbing Department.

1,041,257. Ball-Cock. Charles H. Ellis, Boston, Mass. A ball-cock comprising a casing having a valve chamber, an inlet at the inner end of the chamber, a valve seat surrounding the inlet, an outlet communicating with the inner portion of the valve chamber, a plunger valve movable in the chamber and having a valve face at its inner end adapted to abut against said seat, and an outwardly facing centrally located socket, a float lever fulcrumed on the casing and having longer and shorter arms and an abutment between said arms in close proximity to the fulcrum, a strut seated at its inner end in said socket and connections between the shorter arm of the float lever and the strut whereby the strut may be moved from its seat in the socket by the elevation of the shorter arm to permit the valve to open and may be moved toward its seat in the socket by the depression of said arm to partially close the valve, the abutment being arranged to bear on the outer end of the strut and exert a final valve-closing pressure thereon.

1,041,263. Sanitary Closet. Mathew J. Frambach and Aldon R. Corrington, Hartley, Iowa, assignors of one-half to W. F. Schildt, Hartley, Iowa. A closet comprising the combination with a casing having the usual opening in its top and a hinged cover for engagement over the opening; of a tank positioned within the casing, parallel supporting bars having horizontal central portions and the extremities of their upwardly directed ends removably engaged over opposite edges of the tank, crank rods rotatably mounted in the horizontal portions of the parallel supporting bars, receiving and depositing plates rigidly secured upon the crank rods between the supporting bars,


1,041,257.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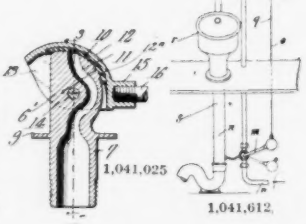
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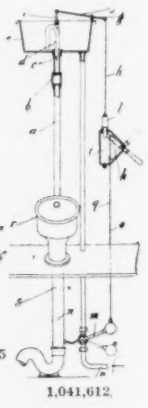
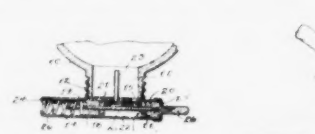

1,041,612.

means for connecting adjacent turned ends of the crank rods, and connections between the cover and the means for connecting the crank rods to turn the latter upon raising of the cover to bring the lower edges of the receiving plates into engagement with one another.

1,045,025. Float-Valve. Frank B. Charroin, South Bellingham, Wash., assignor, by direct and mesne assignments, to Bellingham Brass Manufacturing Co., Bellingham, Wash., a corporation of Washington. The combination with a valve casing having an external arcuate seat and an outlet therethrough, of a cut off cap movable on an axis eccentric to the curvature of the seat and having an arcuate face corresponding to the curvature of the seat and arranged to engage a substantial portion of the seat on opposite sides of the outlet when the valve is closed, whereby to preclude leakage, to insure noiseless closing and to compensate for wear, the cap having sides embracing the casing and pivoted thereto, and means on the cap located substantially at one end of the face and adapted to receive a buoyant means for operating the cut-off.

1,041,612. Flushing Apparatus. Eugen Fränkel, Beuthen, Upper Silesia, Germany. In a flushing apparatus, in combination, a flush-tank having a water inlet and outlet, a siphon located therein and conducting to the outlet, a valve controlling the inlet, and a device hanging freely in the outlet and whose suspension-member extends to the outside, and mechanism for temporarily locking the inlet-valve in its open position, connected with the external part of the said suspension-member.

1,041,417. Soap-Dispenser. Martin Bohlig, St. Paul, Minn. In a dispenser of the class described, a liquid soap receptacle, open at one end and having a closure therefor, a bracket pivotally supporting said receptacle, adapted to lock the same in different positions, a horizontal cylinder on said closure, an inlet port in said cylinder in communication with said receptacle, a discharge port in the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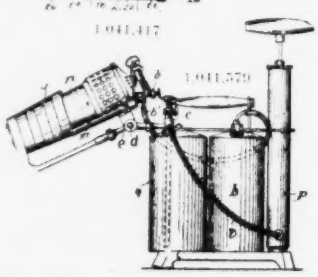
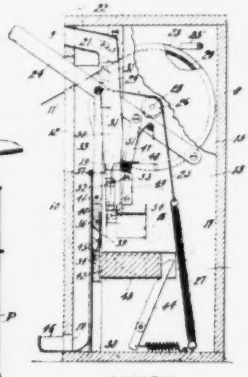

1,041,579.


1,041,710.

side of said cylinder, a movable piston in said cylinder having dual piston heads spaced apart, adjustable with respect to each other and forming a variable compartment adapted to receive and deliver the contents of said receptacle in measured quantities and a tube or vent on said closure leading from said compartment to the interior of said receptacle.

1,041,579. Torch. Georges Alexandre Philippe Bellon, Vincennes, France. In a torch of the character described, the combination of a nozzle, a device adapted to emit inflammable fluid through said nozzle to be concentrated thereby, an annular member fusible at a very high temperature, disposed in the path of concentration with its annular section at substantially right angles to the axis of the path of concentration, and a stem secured to said annular member and nozzle for supporting the former, said stem being disposed below the path of concentration, substantially as and for the purposes set forth.

1,041,710. Sanitary Soap and Towel Dispenser. Richard F. Downey, Milwaukee, Wis., assignor to Sanitary Service Company, Milwaukee, Wis. A soap and towel dispenser, comprising a casing provided with discharge openings, a roller journaled within the casing for holding a roll of fibrous material, another roller journaled adjacent thereto and around which the fibrous material passes, a soap holding means within the casing, an operating lever projecting through the casing, a connection between the second mentioned roller and the lever for rotating said roller when the lever is moved, a soap cutting means connected to the lever, and a locking means for the lever.

1,041,181. Closet and Seat. Joseph W. Sharp, Jr., Philadelphia, Pa. A closet bowl having a stepped portion at its rear comprising a raised tank support 3 and an offset portion 6, a tank 4 resting at its front upon said raised support 3, and a flushing pipe 7 in rear of said portion 3 connecting said tank 4 with the offset 6.

1,041,515. Ball-Joint for Pipes. James A. Rourke, Savannah, Ga. In a ball-and-socket joint for pipes, a socket member having an internal annular rib constituting a bearing for the ball member, and longitudinal ribs formed on the inside face of the socket and constituting additional bearings for the ball, said longitudinal ribs being curved transversely.